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PERU is a country in South America, situated between 3° 30' and 21° 29' S. lat., and between 65° and 81° 29' W. long. On the west it is washed by the Pacific; and on the south and south-east it borders on Bolivia. The boundary-line between these states, at the most southern point of Peru, is formed by the small river Loa (21° 28' S. lat.); it follows the course of this river for several miles, when it turns eastward till it reaches the western edge of the Andes. It follows this edge northward to the mountain-pass of Guanta (17° 50' S. lat.) whence it runs northward across the plain of the lake of Titicaca to the southern extremity of that lake. It traverses the lake in a northern direction, which it preserves till it reaches the eastern chain of the Bolivian Andes, near 15° S. lat. It follows this chain for some distance, and then runs along the lateral range which branches off in an east-north-east direction between the river Tocache, an affluent of the Beni, and some rivers which are supposed to fall into the Purus. From the mouth of the river Tocache, the boundary-line between Peru and Bolivia runs along the Rio Beni to its junction with the Guaporé, by which the river Madera is formed. At this point commences the boundary-line between Peru and Brazil. This line follows the Madera river to 9° 30' S. lat.; it stretches westward along this parallel to the river Yavari, the course of which river, up to its junction with the Amazonas, forms the remainder of the boundary between Peru and Brazil. The Amazonas is the boundary between Peru and Ecuador, from its junction with the Yavari to the town of S. Juan de Brancamoros, south of which place the river Chinchupe falls into the Amazonas. The Chinchupe separates both countries as far as its source, from which the dividing line passes over the Andes to the Rio Tumbes, which falls into the Gulf of Guayaquil, in 3° 30' S. lat.

The length of this country from south to north, along the meridian of 70°, is above 1150 miles, but its width varies greatly. South of 17° S. lat. it hardly exceeds 30 miles, whilst near 10° S. lat. it is more than 630 miles wide. Its area, according to a rough estimate, considerably exceeds 500,000 square miles, being about two and a half times the extent of France.

Coast and Harbours.—The coast-line is about 1500 miles in length. In an extent of 1200 miles this coast forms only three straight lines, which meet at obtuse angles, and are not interrupted by any large bays. The most southern line runs south and north, the central line runs nearly south-east and north-west, and the northern line runs north-west-north-west. The most northern and most projecting portion of the coast is broken by bays and by headlands.

The southern coast-line, which runs south and north, extends from the mouth of the river Loa (21° 28' S. lat.) to the harbour of Arica (18° 28' S. lat.), a distance of 210 miles. The whole of this line consists of rocky cliffs, rarely low, and occasionally several hundred feet high. In a few spots a sandy beach lies between the cliffs and the sea. The projecting points seldom extend a mile from the mainland, and in no case more than two. They also form right angles with the coast, and as they occur only at distances of 16, 15, or 20 miles, they afford no shelter to vessels. A few small rocks lie off the coast, but they are low and too small to protect vessels which anchor between them and the shores. The soundings are irregular. Boats cannot land on these shores, as they are exposed to a very heavy swell from the Pacific, forming a dangerous surf, which can only be passed in favourable weather by boats. Landing in most places can only be effected by balsa. In all this extent of coast, fresh water can only be got at three places, the rivers Loa and Pisagua, and at Arica. The water of the river Loa is extremely bad. The water of the Rio Pisagua is good, but the river is dry nine months in the year, and the water obtained from the wells is bad. At Arica the water is excellent. The only harbour that is of importance, and which is formed by a low island, the largest that occurs along this coast. Between it and the town is good anchorage in eleven fathoms. The harbour of Arica, which lies at the northern extremity of this coast-line, is also formed by a low island, called Huana, on the northern side of which there is good anchorage. A mole runs out into the sea, which enables boats to lie quietly while loading or discharging.

From Arica (18° 28' S. lat.) to Point Carreta (14° 10'), a distance of more than 450 miles, the coast lies east-south-east and west-north-west. Where the cliffs come close to the sea, they rise from 50 to 300 feet above it, and the waves in some places break with great violence along the shore. Even the sandy beach is frequently interrupted by low projecting cliffs, but the soundings are generally regular. The projecting points are usually too short and too far from one another to form safe anchorages and to break the swell of the sea. Towards Point Carreta a few inlets occur, which form good harbours, though even here the landing in boats is generally difficult and sometimes impracticable. Fresh water is much more abundant, and may be got in several places. The first harbour which occurs, after leaving Arica, is that of Yasal, the port of Aréquipa. Cove Molleudo former served for that purpose, but it has so changed, that at present it only admits boats, or very small cocking vessels. Port Ilay is formed by a few straggling islands which lie off Point Ilay, and is capable of containing twenty or twenty-five vessels. The anchorage is good, but the landing extremely difficult, and at the full of the moon it is sometimes impracticable for several days. Point Lomas, the port of Acari, lies further west, and is an open roadstead, but it has good anchorage in from five to fifteen fathoms, and tolerable landing. Some distance farther west there are two good harbours, S. Juan and S. Nicolás, with excellent anchorage and tolerable landing; but the country about them is sterile and uninhabited. Further west is the Bay of Independencia, which lies between Cape Quemada and Cape Carretta, and is protected towards the sea by two islands, Santa Rosa and Cape Quemada, which is three-quarters of a mile wide; or by the wide opening at the north-western extremity, which is called Dardo, and is five miles across between the island of Vieja and Cape Carretta. As the country surrounding this bay is very thinly inhabited, it is rarely visited by vessels.

The coast from Cape Carreta (14° 10' S. lat.) to the roadstead of Lambayeque (6° 46' S. lat.), a distance of about
250 miles, runs north-north-west, and exhibits a much greater portion of low sandy beach than is found farther south. A high ground invariably appears on the north coast of the bay, being short, and at right angles to the coast, they do not afford safe anchorage. Towards the south-eastern extremity are some islands, and between 7° and 10° S. lat. many islands with shallow reefs, the common occurrence on this part of Peru, and good anchorage is found in them. The most southern of these harbours is the Bay of Pisco, which is between the mainland and a row of islands extending along the coast. The most southern of these islands, the farthest north of which are 4 miles long, and of considerable elevation. North of it are the Ballista Islands, and north and south of them the Chinche Islands, both clusters of low islands. The sea about these islands is deep, and the Bay of Pisco may be entered safely by all the passages thus formed. The most southern passage, which is between the island of Gallan and Point Pareaca, is generally used; it is called the Boqueron of Pisco. Within the bay there is good anchorage in the following places:—Between the island of Gallan and Point Pareaca, it is usually entered from the north round Cape Lorenzo, the northern extremity of the island, but it may also be entered by the Boqueron, a strait between Cape Calloa and the southern extremity of the island. Salinas Bay, on the north side of the island, is frequented by coasters, but it is seldom visited. The bay of Sapé, to the north of Cape Thomas, is small, but as it is contiguous to the mouth of the river, it is abundantly frequented. The port of Guarnay, north of Point Logarto, is also small, but it contains good anchorage in three and a half to ten fathoms, on a fine sandy bottom. Firewood is abundant in the neighbourhood, and is exported. Between 9° and 10° S. lat. there are four comparatively good harbours, Callao, Sanmancos, Huamambaco, Ferrol, and Santa. That of Sanmancos is the largest port on Callao, being six miles long from south-east to north-west, and four miles wide. This is the finest bay in the whole of Peru, being in size, and entirely free from the swell of the ocean. Both harbours are much visited by coasters, as the adjacent country is fertile and well cultivated. There is no harbour farther west, and the trade in the town and province of Lambayeque is limited to the port of Callao and the island of Mafello. Between the eastern and north end of the island of Mafello (2° 30' S. lat.) it is 220 miles wide, and its coast-line exceeds 300 miles. Between Point Agua and Cape Blanco, the most projecting part of this promontory, the shores are rocky and steep, and rise to a considerable elevation; but near the roadstead of Lambayeque and on the Gulf of Guayaquil the shores are sandy and partially covered with bushwood. In this part there are two indentations, which form two tolerably deep but open bays. The southern is the Bay of Sechura, which is six miles deep, and at its entrance, between Cape Piscura and the Little Lobos Island of Pyata, 12 miles wide. It is open to the swell of the sea, and is only navigated by the Indians in balloons. The Bay of Pisco, which is farther north, is of smaller dimensions, but it is the best harbour on the whole coast. It is much used, and is visited by foreign vessels than any other harbour except Callao.

As the heavy surf occasioned by the swell of the Pacific renders these coasts impracticable, bal eagles are used along this coast. These balloons differ in materials and form on the different parts of the coast. In Chile and the southern coast of Peru the balsa is a kind of sea-balloon, consisting of wattles made into strips, and inflated like a bladder: they are so light that they float over the heaviest surf without danger. Two of these balloons are fastened together, and a sort of platform made above them, in which three persons are placed. The balsa of the northern coast of Peru is a raft consisting of nine logs of the cabbage-palm secured together by lashings, with a platform raised about two feet, on which the goods are placed. They are fastened together for the sake of the wind, which is almost always from the south and south-west. The balsa is a small, which is most used in landing. The wind being along the shore enables them to run through the surf and on the beach with ease and safety. At Lambayeque, where the surf is very heavy, bundles of reeds are fixed together and turned up at the bow. Being very light, it is thrown on the top of the surf upon the beach, and the fishermen who use them jump off and carry them on the shore for their fruits. It seems that the coast-road has its peculiar balsa.

**Surface, Soil, Climate, and Agricultural Productions.**

As Peru comprehends the whole of the mountain-masses of the Andes which lie between 15° and 5° S. lat., together with the countries on both declivities of the chain, it is naturally divided into three different regions. The country between the chain and the Pacific is called Los Valles, and that included between the higher ranges of the Andes, Montaña. There are but two of the plains contiguous to it are not designated by a peculiar denomination; they may be conveniently called the Eastern Region.

1. The country between the steep ascent of the Andes and the Pacific varies in width from 15 to 50 miles, and may be considered as the western base of the mountains. It has a great elevation above the level of the sea, where it lies contiguous to the range, on an average between 8000 and 10,000 feet, and from this elevation it descends to the sea with a very irregular surface. Where it approaches the shores it is still in many parts from 1500 to 2000 feet above the sea-level, but in other places it is less than 300 feet. This irregularly inclined plain is formed of sand, which is compressed into sandstone. The sandstones run to the sea with a rapid slope. As the adjacent high lands frequently rise 1000 feet above them, these depressions are appropriately called Los Valles, or the Valleys. They are traversed by rivers, many of which are not navigable. They are crossed by the roads which may be considered as replacing the provision of the water. Though the upper course of the rivers is extremely rapid, few of them enter the sea, but are either lost in shallow lagoons or filter through the sand which is invariably found near their mouth. The uplands abound with different vegetables, and are covered with a fine loose sand, through which in many parts the rocks protrude, either in the form of isolated mountains, or more frequently in ridges several miles long. These uplands are divided into strips by low ridges of similar breadth, but never seen on the coast, and they do not produce a single blade of vegetation. No stranger can travel from one vale to another without a guide, the sand being so loose that it is raised into clouds by the wind, and thus all traces of a path are obliterated. As an account of a great heat which is experienced in these uplands in the day-time, and the clouds of sand which the wind then raises, they are usually traversed by night, and the guides regulate their course by the stars, or the light beam which always blows from the south. The vales are most numerous in that part where the coast runs from south-east to north-west, between Lambayeque on the north and Cape Carreta on the south. In this part there are on an average 10 or 12 miles distant from one another, and have a better supply of water than in the other parts of Peru. Where the coast runs from north-west to south-east, between Cape Carreta and Arica, they are less extensive, and from 15 to 20 miles distant from one another, and have no real vales, and occur at greater intervals. In the most northern district the vales are more extensive, and contain considerable portions of cultivated ground, but they are at great distances from one another. Between Lambayeque and Sechura the desert is 90 miles across.

It is well known that the vicinity of the sea very materially influences the climate of countries, but the Pacific affects the climate of this region in a very extraordinary way, of which no satisfactory explanation has been offered.
Along the whole coast of Peru, south of Cape Blanco, a
shower is never experienced, a drop of rain never falls. But
for nearly five months, from June to November, the sky is
covered with a kind of fog, which is called the *pera*. In
the morning it is so thick and close to the ground that
objects at a considerable distance cannot be seen. About ten or
eleven o'clock the fog rises into the atmosphere, but not
breaks into clouds. This fog covers the sun so effectually
as to intercept the rays, and the day is hardly visible. During
this period the north wind is constantly blowing, and due
caused by the condensation of the fog. This dew is not
heavy enough to penetrate the thinnest clothing, though it
changes dust into mud, and fertilizes the ground. While
this is going on conveying the lower parts of the country, and
constitutes their winter, the higher declivities of the Andes
enjoy fine weather and have their summer. But in the
month of January the rains on the mountains commence,
and last about three months. The rains occur however
easier in the year in the northern than in the southern
districts: and hence it happens that the rivers in the
northern part of Peru are full at the end of January or the
beginning of February, while in the southern parts this
does not take place before the end of March.

The climate of Peru is not so hot as might be supposed.
In summer the weather is delightfully fine, and the heat
is moderated by the sea and land breezes. The sea-breeze
generally commences about ten o'clock; it is then light
and refreshing. The land breeze, on the other hand, sets
in the afternoon. A steady breeze prevails until sun-set,
when it begins to die away; and soon after the sun is down
there is a calm. About eight or nine o'clock in the evening
light and refreshing sea breeze sets in, and this continues
when it again becomes calm, until the sea-breezes sets in.
It is also supposed that the cold current which runs along
this coast from south to north, and the temperature of
which is on an average 8° lower than the mean annual
temperature of the adjacent coast, may contribute to
 moderate the summer-heat. During the winter however, that
is, during the fog, the air is raw and damp, and woollen
and other clothing is then necessary for the preservation of
health. The temperature on the coast is only 65°; it is 72°
in the day-time it varies between 72° and 77°, and in the night
between 60° and 63°.

The prevailing winds along the coast blow from the south,
varlying between south-east and south-west. They are
seldom stronger than a fresh breeze, especially along the
cost south of Cape Carretas, where calms sometimes set in
and last three of four days. Further north they are stronger and
blow for an extent of about 18 miles. This is called the baza, that
sometimes blow with great force. In winter lighter north-westerly
winds are occasionally experienced. At some distance from
the shores the prevailing winds blow from south and south-
east, and their height in the mountainous and thundery
storms occur; lightning indeed is seen from a distance,
but thunder is never heard. Earthquakes are frequent,
and sometimes destroy the towns and villages.

We do not know at what elevation above the sea-level the
rains begin on the western declivity of the Peruvian Andes,
but as travellers observe that cultivation and vegetation be-
gin to increase at the height of from 8000 to 9000 feet, it is
evident that such tracts must have the advantage of an-
nual rains.

As the mean annual temperature of Peru does not much exceed
that of the countries along the southern coast of the
Mediterranean, all the grains and fruits of Spain succeed,
and have been transplanted to Peru in which place they
ever seems attributable rather to the want of a sufficient
quantity of moisture than of heat. Indian corn is generally
cultivated, and constitutes the principal food of the Indians
and lower moderate distance cannot be seen. Wheat succeeds
only in the more elevated part of the valleys, where barley
also is grown. Potatoes and sweet potatoes are generally
cultivated, also mandioque, yams, and banana to a smaller
extent. Rice is extensively grown in some of the
widder northern valleys, and especially at Callao. Wheat
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the western Andes, and may be considered as united to them by the elevated table-land of Pacso, which is situated between 11° 10' and 10° 30' S. lat. At the northern side of this table-land, there is a great divide, and run parallel to each other to 7° 8' S. lat., where the eastern chain inclines to the east of north, and continues in that direction to the banks of the Amazonas, at the famous Pongo de Manseriche. Where both ranges run parallel, that of 7° 8' S. is higher than 5° 6' S. lat. distant from each other, but near 5° 8' S. lat. they are 120 miles apart. In the northern portion of the eastern chain there are a few snow peaks, as the Paramo de Caracalla (near 7° S. lat.) and the Paramo de Pocaynaya (south of S.) which are considered as the snow-mountain of the Andes, which enclose this region. The valleys between these ridges are usually several miles wide, but their surface is diversified by low eminences. The whole region declines towards the north; and the river Rio Maranón, which at 1,100 feet above the sea-level, we may reasonably infer that the districts south and west of this place are more elevated. But the rapid course of the numerous rivers which descend northward, shows that the plain between the ridge towards low north; and on the banks of the Rio Mantaro it probably does not exceed 8000 feet above the sea. This is also confirmed by the agricultural products. In the most elevated districts south and west of Cuzco the only cultivated grain is the quinoa or cooked barley; in the plains of the valley of the Desaguadero. [BOLIVIA, vol. v. p. 67.] In the parallel of Cuzco the climate is favourable to the growth of wheat, Indian corn, and the fruits of Europe, but the last require a good deal of care, and the fruits usually met with between the tropics do not succeed. In the lower parts of the valleys north of 13° 8' S. lat. the agricultural products consist of Indian corn, sweet potatoes, yucas, and plantains. The sugar-cane succeeds very well, and is cultivated in some parts, but not extensively. The mountains which enclose these valleys are covered with thick forests; but trees are scarce in the more elevated districts, and in some of them we are entirely wanting. We are not acquainted with the climate in these parts, but expect, from what we have heard, rainy all the year round. In the valley of Pucaratambo rain falls 300 days in the year.

The Vale of the Rio Junaja extends from the table-land of Pacso, about 10° 30' S. lat., to about 11° 15' S. lat., between both ranges of the Andes, and in the widest part is about thirty miles across. Its descent from the table-land is very rapid. At its southern extremity, near 12° 30', it is probably less than 9000 feet above the sea-level. Though this valley is the most populous district of Peru, and contains several comparatively large towns, our information respecting its climate and productions is very scanty, none of the modern travellers who have visited Peru having described this part of the region, it is only known that the northern districts produce abundance of wheat, Indian corn, and the fruits of Europe, and that in the southern, yucas, plantains, and mandioc are cultivated, and that the sugar-cane and tobacco are grown to a considerable extent.

The table-land of Pacso has lately been more visited by travellers than any other part of the interior of Peru, the Andes here being crossed by one ascent and one descent. The ascent from the Pacific is near the high summit called La Viuda, about 11° 10' S. lat. and 76° 30' W. long, and the descent is north of the Cerro Pacso, near 10° 30' S. lat. and 75° 40' W. long. The width of the table-land from south west to north-east is about 60 miles, and in these parts it is enclosed by ranges of mountains rising from 5000 to 6000 feet above the sea. Its length cannot be determined, as the mountain-masses are broken, towards the north-west and south-east, by numerous river-courses, and do not constitute a determinate boundary, but are in a state in which it is impossible to determine it. It is about 300 miles long. The table-lands enclosed within the Andes, the level parts being 14,000 feet above the sea-level. As the snow-line in this part of the Andes seems to occur about 15,500 feet above the sea, the surface of the table-land is only 1000 feet below it, in which region there is no rain and it is said that they have remained uninhabited but for the rich mines of Pacso, which have attracted a numerous population. The mean annual temperature probably does not exceed 40°, which is equal to some parts of the arctic region. The air is too dry to be more disagreeable, as nearly all the year round it resembles that of the month of April at Trondhjem. Even in the midst of summer, from May to November, the nights are cold, and at sun-rise all the country is covered with hoar-frost, at time the thermometer indicates 32°. At nine o'clock it rises 4° or 5°, and in a short time a considerable degree of heat is experienced. But the sky, which is serene in the night-time, is soon covered with vapours accompanied by a storm, which is generally followed by a fall of snow mixed with hail. This state of the weather sometimes continues for several hours; but at other times some fine intervals occur. In the afternoon, storms are frequently experienced, accompanied by frightful thunder and hail, which sometimes cause great loss of property and life. In April, two or three weeks generally pass without storms and night-frosts. In the winter, from November to March, the weather is much worse, as the snow-furnace is then last opened, and as the country is both serene and of a dark-blue colour, the sun looks as if we were eclipsed. The table-land is a plain divided into a considerable number of smaller plains by ridges of rock, and on the mountain ranges which enclose it, are the surface of the level parts consists partly of bare rocks or sand. The sand is partly covered with peat, or by swamps, intersected with grassy tracts, which serve as pasture-ground for the great herds of cattle moving in large numbers for the purpose of carrying the ore from the mines to the smelting-places. A great number of lakes are dispersed over the plain. They are very deep, and are the sources of some of the largest tributaries of the Amazonas. The river itself, in the northern part, runs southwards to the source of the Marañón, which is considered as the principal branch of the Amazonas. In the southern district is the lake of Chinchayococha, of large dimensions, from which a river issues which is the principal affluent to the river Ucayali. Near the eastern edge of the table-land is the lake of Quilisoochee, whence the Rio Huallaga, an affluent of the Amazonas, issues. Nothing is cultivated on this table-land, not even the quinoa.

The Vale of the Rio Marañón extends from 10° to 5° S. lat. The southern part is very narrow, the river running in a valley so constricted, that it is merely a wide ravine. The valley gradually widens about the middle of the river, which here enlarges to a valley several miles wide, and more than 200 miles long. The southern part of this valley is probably not much more than 3000 feet above the sea-level, and it loses its name at its mouth, where it is known as the Pongo de Putina, it is only 1250 feet above the sea. The lower part of the valley, north of 7° S. lat., is many miles wide, but not a level, as several offsets from both chains of the Andes advance some miles into it, and in several places within a short distance of each other. This valley is by far the hottest portion of the mountain region, and the vegetation in the lower parts does not differ from that of other tropical countries. Wheat is only grown on the desert plains in the latitude of Indian corn, mandioc, plantains, and yucas are most extensively grown for the consumption of the inhabitants, and the sugar-cane and tobacco for exportation. We know nothing of the climate of this valley except that the heat is very great and that it has the advantage of rains. Though hardly less populous than the vale of the Jauja, it has been little visited by modern travellers.

On the west side of the Peruvian Andes, the region of the tropical vegetation does not ascend more than 2000 feet above the sea, but in the valleys of the mountain region it rises to between 4000 and 5000 feet, probably owing to the abundant rains which fall on the latter. The cultivated products in these parts are plantains, bananas, manioc, yams, camotes, and the sugar-cane. The principal fruits are grapes, anonas, pine-apples, papaws (naranja), and cherimoyas. Above this region is the range of the Colca, where the Pacific reaches to 10,000 feet, and in the valleys to 12,000

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feet and upwards. The grains cultivated in this region are wheat, barley, and Indian corn; potatoes and different kinds of pulse are also cultivated. The fruit-trees are those of Europe, among which the peach succeeds best. Above this region only quinoa and barley are cultivated; they are, however, not grown in layers of tall evergreen and deciduous trees, attaining 13,000 feet. There are no forest-trees on the western declivity of the Andes below 8000 or 9000 feet, but in the interior of the mountain region they increase in size and number in proportion as the country declines in height, and the lowest districts are covered with nearly impenetrable forests of lofty trees.

Several roads lead from the coast of the Pacific to the interior of the mountain region. Six of these roads occur south of the 14° 30' S., and all of them are described in the maps.

The most southern is the Pass of Las Guallillas (17° 30' S., lat.), which is 14,570 feet high, and a little farther north (17° 40') is another pass of the same name, the highest part of which is 14,200 feet. The Pass of Chullunquani (17° 18' S. lat.) is 15,600 feet high. The lowest and most frequently passed in these parts is that of the Altos de los Huerosos; it runs a little south of east at a height of 3000 feet above the sea-level. It is near the Andes (16° 21' S.) it is only 13,573 feet high. The Pass of the Altos de Toledo (16° 3' S.) rises to 15,526 feet, and the Pass of La Guallillas (15° 22' S. lat.) to 15,613 feet. The last-mentioned pass is situated near where the mountains of Vilcanota join the Western Andes. A mountain-pass leads over the mountains of Vilcanota from Santa Rosa, in the valley of the desaguadero, to Cuzco. We are imperfectly acquainted with the road which leads from the Andes north of 30° S. A pass leads from Lima to the town of Huancaelica, the highest point of which is 15,080 feet above the sea-level. Farther north is the pass called Portachuela de Taeto, through which the road from Lima to Trujillo passes; it is 15,700 feet high. The road which leads from the coast to the table-land of Pasco traverses the Pass of the Alto de Jacabamba, which is 15,135 feet high, and also that of the Alto de Lauchlagal, which rises to 15,480 feet, a pass which is situated on the road from the town of Pasco to the valley of the Rio Huallaga. This road does not exceed 14,000 feet, and runs in a ravine of the table-land. A road leads from the town of Trujillo to Caxamarcas, in the valley of the Marañon, which is in the Pass of Macupampa is 11,604 feet above the sea-level. From Caxamarcas a road leads northward to Chachapoyas, and from the last-mentioned place, over the Eastern Andes, to Moyabamba and Tarma. The most northern mountain-pass in Peru occurs in the adjacent valley of the Ucayali. A pass called La Guallillas is situated where it attains the elevation of 10,950 feet above the sea-level.

III. The Eastern Region comprehends the eastern de-
crease of the Cordilleras; it includes the valleys and plains which belong to Peru. It is the largest known portion of that country, and our information about it is extremely scanty, except as to the vale of the Rio Huallaga. This extensive valley lies east of the vale of the Marañon, being separated from it by the Eastern Andes. It extends from 10° 30' to 7° 30' S. lat., about 350 miles in length. The most southern part, as far north as 9° 30' S. lat., is narrow. In this part the descent is rapid. Huanuco is about 9000 feet above the sea-level, at 9° 30' S. lat. The vale is probably not more than 4000 feet high. At this place it begins to widen. The Eastern Andes receding to the distance of 15 or 20 miles from the river. This may be the width of the vale of the Marañon. High banks of the river come up to the river, and as high hills approach also on the east close to its banks, they form, near 6° 30', the Pongo of Huallaga, at which the valley terminates on the north. The country north of the Pongo is quite level, and belongs to the alluvial plain of the Amazonas. The last-mentioned region is formed by a range of hills, which south of 9° 30' S. lat. probably do not fall short of 10,000 feet above the sea-level, and between 7° and 9° 30' S. lat. rise to a considerable elevation. The places which are the most elevated, is situated the soil of the wider portion of the vale is chiefly alluvial, and as it combines great fertility with abundance of moisture and a great degree of heat, it is capable of maintaining a numerous population. At present however it is thinly in-
habited because of its inhospitable climate, which has increased considerably. There are at least one hundred very rainy days in the year, and these occur particularly in October and November. It does not appear that the dry and rainy seasons are distinguished as in other countries, showers being frequent all the year round. The heat is great, and during the rain it is frequently oppressive. The declivities of the mountains which enclose the vale are never of great height, and it is the case with the greatest part of the vale itself. Wheat and barley are grown in the southern and more elevated districts, whence they are sent to the table-land of Pasco. In the lower sorts of vegetation, two hundred species of plants, and three sorts of bananas are cultivated. There are also plantations of sugar-cane, coffee, cacao, and coca. The coca is an herb much used by the Indian population, who chew it with a small quantity of lime. Fruit is here produced in greater perfection than in any other part of Peru. There exist thirty-two kinds of fruit-trees. Many of these trees hardly require any care at all. There are eighteen different sorts of vegetables.

The country to the east of the range of hills which form the eastern boundary of the vale of the Huallaga, and extending from their base to the banks of the Rio Ucayali, is known under the name of Pampa del Sacramento. The term "pampa" is applied in South America to level plains situated in the inmost part of the interior of some country. It seems that the seat of the capital of the Kingdom of Peru was of this description. But according to the latest information, this country is covered with woods, though they are not so dense as the forests in the vale of the Rio Huallaga. The sea-level is described as a level with the bottom of the Rio Ucayali. At some distance from this river the country is diversified by numerous eminences. This country extends from the banks of the Amazonas to the Rio Pichiciego, which is more than 60 miles from the vale of Huallaga, and is separated from the vale by hills varying between 40 and 100 miles. North of 7° S. lat. it is a dead level, and forms part of the alluvial plain of the Amazonas. As no European settlements have been established in this part of Peru, we are very imperfectly acquainted with its climate and products. It is certain that the soil is suited for crops which do not suffer from oppressive heat, as the thermometer ranges only between 75° and 85° when the sun passes over the zenith. In fertility and products it does not seem to be inferior to the vale of Huallaga. The lands are all covered with woods belonging to the Sencis Hills. Of a small number have embraced Christianity.

The country extending from the eastern banks of the Rio Ucayali to the river Yavari, which separates Peru from Brazil, is entirely unknown, except so far as it has been seen by travellers who have sailed on the Ucayali and Amazonas, where it appears to be flat and covered with woods, exactly resembling the Pampa del Sacramento in its general situation. There the low hills do not rise on the plain between 74° and 75° W. long.; and north of 7° S. lat. they are called the Sencis Hills. It is not known whether these hills extend in an uninterrupted chain from the river Ucayali to the eastern limit of the present known country, or whether the Eastern Andes, north of 12° S. lat.; but this is the direction given to them in our maps.

The Pampa del Sacramento extends southward to the banks of the river Pichiciego. The country which extends south of the last-mentioned river, from the eastern chain of the Andes to the Rio Ucayali, is likewise entirely unknown. According to information collected from the native tribes that live in this part, it is chiefly covered with forests, which attain a great elevation towards the Andes, but towards the Ucayali sink into hills. The country along its banks seems to be rather flat; it is also said to be entirely covered with forests, except in the highest summits of the mountains.

The rivers—The rivers which descend from the western declivity of the Western Andes and fall into the Pacific have a short course, and flow with great rapidity. They are also shallow, and have very little water during the greater part of the year; many of them are quite dry for several months. Accordingly they cannot be navigated even by the smallest canoes, but the water is used to irrigate the adjacent flat tracts.

All the large rivers of Peru originate within the mountain-region, and all the waters which collect in it are united in three large streams, the Marañon, the Huallaga, and the Ucayali. These three rivers may be considered as the principal branches of the Rio Amazonas. The Marañon, which is commonly considered as the principal branch of the Amazonas, issues from the lake of Llauricocha on the table-land of Pasco, and runs north-north-west about 2400 miles in a narrow valley, and with great rapidity. In this distance it descends not less than 10,000 feet. It then flows
Domestic animals are far from being abundant in Los Valles, on account of the want of pasture. There is a good supply of horses, and still better of mules, which are used for the transport of merchandise. On the elevated table-land of Pasco, and in other mining districts, llamas are kept for the purpose of giving half the load of a mule. Cattle are abundant in the mountainous region, where the declivities supply extensive pasture-grounds; and in some places sheep abound, especially where the situation is too cold for cattle.

Near all the streams peculiar to South America are found in Peru, as the jaguar, the puma, the spectacled bear, sloths, armadillos, ant-eaters, guanacoes, and vicuñas. Several species of monkeys occur in the eastern region, but none of the latter species are found in the districts near the coast. The condor inhabits the most elevated parts of the Andes. Parrots, parroquets, and macaws are numerous in the woods on the mountains. Whales and seals abound along the coast, and this branch of fishery is chiefly carried on by vessels from the United States of North America. Fish are plentiful in the large rivers of the eastern region, where they constitute the principal food of the inhabitants, together with the manatee and turtles. The manatee occurs in large numbers in the Parana river. The oil extracted from the eggs of the turtle is an article of export under the name of manutia. Alligators are numerous in these rivers, and they are often thirty feet long.

Peru is the richest country that has yet been visited, for the number of mines which have been worked is above a thousand; but most of them are exhausted, or at least abandoned. Among those which are still worked, the mines of Pasco are the richest. Formerly the annual produce of these mines amounted to eight millions of dollars; but at present it probably falls short of half that sum. There are quicksilver-mines near Huancabocas, which were formerly very rich: we do not know in what state they are now. Copper, iron, lead, and brimstone are found in several places. Saltpetre is found in the country adjacent to the Pacific, south of Arequipa, and great quantities of it are exported by English vessels. It is not a nitrate of potash, but of soda. Salt is collected on the coast north of Callao, at Point Salinas, and in the Sullana valley, where there are three salt-linas, or salt-ponds. Nearly all the mines of the precious metals are on the most elevated parts of the Andes above the line to which cultivation extends, a circumstance which renders the working of these mines very difficult and expensive.

Inhabitants.—No census having been taken, the population is vaguely estimated at 1,500,000, composed of creoles, descendants of Europeans, Peruvian Indians, and a mixed race. The Peruvians are the factotum of the American government, and nearly independent, and only those natives who inhabit the vale of the Huallaga have been converted and subjected to the government of the whites. The number of creoles is stated to be about 250,000, the number of the Peruvian Indians to near 1,000,000; the remainder are a mixed race, the offspring of Europeans and Indian women.

The Peruvian Indians inhabit the Valles and the Montaña, to the exclusion of all other native tribes. They speak the Quichua language, which is generally called the language of the Incas, and which is used by all the natives of South America, from Quito near the equator, to Tucuman in La Plata, 27° S. lat. The Peruvians are said to have acquired a considerable degree of civilization at the time of the arrival of the Spaniards, a fact which is proved by the numerous ruins of extensive buildings, the remains of the great artificial road which leads through the Montaña from Quito to Cuzco, and thence southward over the valley of the Desaguadero; and more particularly by the fact that they irrigated the low tracts in the valleys by making cuts to convey the water from the small rivers over the fields, and by the judicious manner in which the water was distributed. It may be said that their condition has been improved by the conquest, inasmuch as they acquired iron-implements and domestic animals to assist them in their agricultural labour; and that from them they have received wheat, cotton, and various kinds of woollen cloth. These Indians apply themselves particularly to agriculture, and there are numerous villages, and even small towns, the whole population of which now consists of Peruvians. They also raise all kinds of fruits, and many kinds of cotton, and other kinds of woollen cloth. These kinds of manufactures existed before the arrival of the Spaniards, and
must have existed in a country where the climate obliges the people to put on warm clothing for several months in the year. They are also fishermen, and sail with their balsa alone, except from one small port to another to exchange their different productions.

The native tribes which inhabit the vale of the Huallaga river have been converted, and are nearly equal in civilization to the Chunchos. They are the most numerous of the banks of the Huallaga, and on the western are the Cholones, Charras, and Ibitas. They all seem to belong to one nation, as they speak one language, called the Ibita, though most of them have names of their own. They cultivate the grains and roots which have been mentioned as the principal productions of this valley. Their dwellings are much inferior to those of the Peruvians, which however may be attributed to the circumstances of their country not being equal to those of Europe by the form and situation of the valley, the climate, the dress, except that they wear no covering for the head or feet, which they stain blue.

The independent native tribes inhabit the low and level country east of the mountain region. It is more than probable that all these tribes are not known, even by name. South of 12° S. lat., on the east of the Andes, are the Chunchos and Tuyoneras. The Antes inhabit the country west of the Pucaricamba and Quibilamba unite, between 9° and 11° S. lat., and 12° and 14° 12' W. long., as 9° S. lat., are four tribes, the Tampas, Palutuniques, Chuntaguiris, and Yarosi. The country on both sides of the Pachites river is in possession of the numerous and warlike tribe of the Sipos, which is the mining and cultivating country, and other districts inhabited by the Slavo, who allow strangers to enter their country. They have advanced as far north as 8° S. lat. North of them, between the Huallaga and Ucayali, are the Conibos, Setebos, and Sipos. They inhabit the Huallaga, the asphaltos, and Pinausia. Between the Ucayali and Yavari are the Amazocas (between 9° and 8°), the Remos (between 8° and 7°), the Sencis and Capananaguás (7° and 6°), and the numerous tribe of the Mayonuras, which occupy the country to the west of the banks of the Ucayali, and to the east of the banks of the Yavari. All these tribes inhabit both banks of the Ucayali speak one language, or dialects which differ very little from one another. This language is called Funo. Some of these tribes have been partially converted to Christianity, as the Conibos, Setebos, and Sipos, but the missionaries have made no impression on the other tribes, and no attempt at conversion has been made among some of them. Since Peru has obtained its independence, the missions have been much neglected, and many of the converted Indians have returned to the woods, and are again lost to civilization. The converted tribes are agriculturists, which is also the case with several of the unconverted tribes, as the Chunchos, Antes, Remos, and Sencis; but the latter are rather the traders and wandering in the forests in pursuit of game. The converted tribes wear clothing, but the others go quite naked. None of these tribes have any chief, but they all like the warlike tribes, produce of the land, and are engaged against their enemies they have no leader, but each warrior acts individually, and appropriates to his own use all the plunder or prisoners that he takes. They use a few articles of European manufacture, as hatchets, knives, scissors, needles, buttons, and some glittering bases. They procure these articles either at Nauta on the Amazonas or at Sarayacu on the Ucayali. The Chuntaguiras, who are the most remote from all the settlements of the whites, ascend the Ucayali and Urumbamba to the confluence of the Pucaricamba and Quibilamba, where they procure by barter such articles as they want, giving in exchange parrots and other birds, monkeys, cotton robes white and painted, wax, balsa, the feet of the tapir, feather ornaments for the head, and jaguar and other skins.

Political Divisions and Towns.—Peru is divided into eight departments, Truxillo, Junin, Lima, Huancab does, Ayacucho, Cuzco, Arequipa, and Puno. The countries inhabited by the independent tribes are not comprised in these departments.

1. The department of Truxillo extends over the northern districts of the republic, from the shores of the Pacific to the mountain on the coast, north of Santa (near 9° S. lat.), the lower and wider portion of the vale of the Marañon, and likewise the greater part of that of the Rio Huallaga. The mountains contain many mines, several of which are still profitably worked. It also produces great quantities of sugar, which is exported.

On the eastern chain of the Andes, in a district called Huarmalies, a great quantity of Jesuita-bark is collected. The number of crooks is comparatively small, and that of the Indians very great. There are numerous runs of ancient buildings in the Valles and vale of the river Marañon. Payta is a commercial town with an excellent harbour, which in 1835 was visited by upwards of 4000 tons of shipping. The town is built on the side of a hill, the foot of which hill, contains 5000 inhabitants. It is the port of the very vale of the Rio Piura, which contains 75,000 inhabitants, and is a place of much business, as communication with other parts of Peru. The town of S. Miguel de Piura, built on the banks of the river, about 20 miles from Payta, contains a population of from 8000 to 9000, and some manufactures of soap and leather. Lambayeque is situated in the same district with the town of Payta, and has an inferior commerce, though the roadstead is bad. It contains about 4000 inhabitants, and exports bullion and rice. Truxillo, founded by Francisco Pizarro and named after his birthplace, is situated in the middle of the extensive valley of Chimu, about two miles from the sea. The harbour Huama cho is an open roadstead. The streets of Truxillo are wide and regular, and it has a fine cathedral and a handsome town-

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contain rich ores. The houses are low, and some have small glazed windows; but the suburbs are merely a collection of huts. The country is studded with the remains of trees; it is fortunate that coal abound in the neighbourhood. In the upper valley of the Rio Huallaga, north-east of Pasco, is the town of Huamanga, with 9000 inhabitants, which owes its prosperity to the circumstance of its being the seat of the university. Between Huamanga and Pasco there are several small towns. In the neighbourhood there are ruins of considerable extent. In the vale of the Rio Jauja is the town of Tarma, with 6600 inhabitants, in which cotton and woolen stuffs are manufactured.

3. The department of Lima extends along the coast from Barranca (11° S. lat.) to Point Penates (15° 30'), and comprehends that part of the maritime region in which the valley of the Rio Lurin is distinctly separated from one another. It extends inland to the lower declivity of the Western Andes. All the productions of the vales grow here, and are tolerably abundant. The population contains a greater proportion of creoles than that of the other departments. There are some extensive ruins of ancient buildings and towns. North of Lima is the town of Huacho, built in an extensive and fertile valley about one mile from the port, which is small, but has good anchorage. Lima is the port plain of the republic, 130 miles below Callao. [Lima; Callao.] South of Callao is the small town of Chorillos, built on a cliff at the foot of the Morro Solar, a remarkable cluster of hills; it is chiefly used as a burial-place. It is the seat of the University, and the dwellings of the valley of Lurin, which is a few miles farther south, are the ruins of the ancient city of Pachacamae. Cerro Azul, farther south, in the middle of a fertile valley, is a considerable place, and exports large quantities of cotton and flax. South of Pisco, in the vales of Yea and Nasca, in which much wine is made, and exported to other parts of Peru; but it is inferior to that of Pisco.

4. The department of Huancavelica lies east of Lima, and extends over the Western Andes and the lower vale of the Jauja. The mountains contain a great number of mines, and several of them are still worked with profit. The fertile vale is well cultivated and inhabited, as it supplies the mining district with provisions. The number of creoles is considerable. The capital, Huancavelica, is built in a ravine between mountains whose summits rise to the height of 13,000 feet, and which contain several mines of gold, silver, and copper. Casma and Vicuña are two small towns, Yca and Nasa, in which much wine is made, and exported to other parts of Peru; but it is inferior to that of Pisco.

5. The department of Ayacucho received its name from the plains of Ayacucho, on which General Sucre, on the 5th of December, 1824, defeated Cauca and the vicerey of Peru, and put an end to the dominion of Spain in South America. It extends over a part of the Western Andes, the western lower portion of the table-land of Cuzco, and the valley of the Rio Mantaro. The principal productions are the cereals and fruits of Europe. The population consists of Indians: white are only found in the town. The capital is Huamanga, a large place with 26,000 inhabitants, founded by Francisco Pizarro, in an elevated situation, on the declivity of some mountains of moderate elevation above their base. It contains several large private buildings of stone, covered with tiles. The suburbs, which are inhabited by Indians, are large, and the houses better than in other Indian towns. It has a fine cathedral, a university, and a seminary for education. The rich creole families that live in this town have large sugar-plantations in the valley of the river Mantaro. As the town is situated on the road leading from Lima to Cuzco, it has a considerable trade. Six miles south-east of the town are the plains of Ayacucho. North of it is Huanta, a small town, in a district rich in agricultural produce, especially wheat and Indian corn.

6. The department of Cuzco extends over the whole of the southern and over the greater portion of the northern part of the table-land of Cuzco. The Peruvians are very numerous in this country, and in many places ruins of ancient buildings occur. The southern districts contain extensive plantations of sugar and other intertropical plants. In the southern districts are several mines, among which the silver-mines of the town of Cuzco (Cuzco), there is no town of importance in this department. Abancay, in the narrow valley of the upper Apurimac, is a small place. The plain which lies east of the eastern Andes contains a small number of plantations used for the export of cotton, and wool, but little visited by travellers. The port, called Point Lomas, has good anchorage and tolerable landing. Islay, the harbour of Arequipa, contains about 1500 inhabitants. These are chiefly creoles, and live mostly towards the harbour. The trade is flourishing, and it exports bark, wool, and specie. On the north-east of the capital, Arequipa [Arequipa], stands the volcano of Arequipa, 17,200 feet high. There is always snow on the north-west side of its summit. Yare is a small place on the coast.

7. The department of Puno extends along the Pacific coast from Point Sama (15° S. lat.) to the Rio Los, which constitutes the southern coast of Bolivia. It comprehends also that part of the valley of the Desaguadero which belongs to Peru. The vales along the coast are small, and in average 20 miles from one another. The rivers which drain these valleys have in general water only during three months of the year. In the barren tracts which divide the valleys much saltpetre is collected, and in some silver and copper ore are found. The population is more scanty than in any other part of Peru, and chiefly consists of Indians. The principal town on the coast is Puno, which contains a population of about 3000 souls, who live in low houses built of sun-dried bricks. [Avarca.] It is the port of Tacna, a town built in the same valley about 30 miles from it, and the seat of a deposit of salt. There is an extensive plantation of sugar near the department of Puno and the greater part of the republic of Bolivia. Tacna contains 7000 souls and several well-built houses. Ytique (20° 12' S. lat.), with a bad roadstead, has only 1000 inhabitants; a considerable quantity of saltpetre is collected here. Nauta is a town on the valley of the Desaguadero, the towns of Puno, the capital of the department, which has a population of 9000 inhabitants, and Chuquito, with 5000. In the vicinity of Puno are numerous silver-mines, which in 1805 yielded 96,628 marks of silver, but since that time the produce has fallen off.

In the countries of the independent tribes there were formerly several towns, or stations of missionaries, who collected a number of aborigines and tried to convert them to Christianity. Nearly all these missions have been destroyed by the political changes to which Peru has been subject during the last twenty years. Only one of them is in a flourishing state, that of Sarayacu, on the Rio Urubamba, near 7° S. lat., where about 2000 individuals of the tribes of Pima, Setebos, Conibis, Shibeos, and Sencia live in scattered houses, and seem to advance, though slowly, in civilization. The following is a list of the mineral products of Peru:

Manufactures.—The Peruvian Indians consume a very small quantity of European manufactured articles. Their dress is composed of cotton or woollen stuffs made at home, or in several of the towns and villages of the province of Ayacucho and Jauja. These home-made stuffs also serve as the dress of the mixed race. Only the creoles dress in European stuffs. There are some manufactures of cardovan leather, and some tanneries and soap-houses. The iron works, textiles, and other objects of the same description are highly valued. In the large towns many per-
sons are occupied with making vessels, utensils, and ornaments of gold and silver.

Commerce.—The country is too mountainous to admit the making of stage roads in the interior. They are generally used by travellers and for the transport of merchandise. In the more elevated parts of the country llamas are employed for the latter purpose. Six great roads traverse the country from west to east: the most northern runs from Huancabamba to Trujillo, Chucuito to Tarapoto. One road leads from Lima to Pasco, another to Tarma, and a third to Huancabamba, Hacamango, and Cuzco. A road leads from Ilay to Arequipa and Puno, and another from Aycas to Tarma, and hence to La Paz and Oruro in Bolivia. The goods imported from foreign countries are sent by these roads into the interior of Peru.

The foreign commerce is considerable, especially that with the other countries of America bordering on the Pacific, and also with Europe. The most important article of export is the produce of the mines, especially silver. The second in importance is sugar, which is sent to Mexico, New Granada, Ecuador, and Chile. The third article in importance is perhaps saltpetre, the quantity sent to different countries of Europe being very great. Cotton, tobacco, Indian corn, rice, salt, and spirits are minor articles. The greater part of the country's wine, and fruits are imported from Chile, with which country there is an active commerce. Manufactured goods are received from Europe and from the United States of North America, and from Canton silks and nankeens.

The principal harbours from which the exports are made, are Payta, Lambayque, Callao, *Pisco, Ilay, Arica, and Iquique. We have no recent account of the commerce of the first named, which is perhaps three or four times greater than the exports are shipped. The three last-mentioned harbours are called puerto intermedios, and are usually visited by European vessels which sail along the coast from Valparaiso in Chile to Callao. Nothing is imported into Iquique, the most southern of these harbours, but in 1834 not less than 148,150 cwt. of saltpetre were shipped, of which more than 100,000 was on account of British merchants. The value amounted to 125,000 l. The number of European vessels which in 1834 traded at these ports was 171, and their tonnage amounted to 15,094; there were 17 English vessels, of 3651 tons, 8 French vessels, of 2003 tons, and 10 vessels from the United States of North America, with which, however, the intercourse was not marked.

The vessels from Chile and other parts of Peru were 26 in number. They exported bullion and specie of the value of 320,301 Spanish dollars, equal to 72,692 l; bark to the value of 175,552 dollars, or 39,904 l; cotton to the amount of 18,285 dollars, or 4114 l; and wool to the amount of 13,252 dollars, or 2982 l; chinchilla and vicuña skins, hides, and cotton were among the minor articles of export. In the same year the Spaniards had violated the truce and entered the Bolivian part of the valley of the Desaguadero and shipped at Arica. The value of all the exports of Arica does not exceed 150,000 l. The exports of Ilay in the same year amounted to 1,135,590 dollars, equal to 255,507l.  

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<td>Saltpetre</td>
<td>776 l.</td>
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<td>Spices</td>
<td>124 l.</td>
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<td>Bark</td>
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<td>Sheep</td>
<td>114 l.</td>
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<td>Vicuña wool</td>
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<td>Sheep wool</td>
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<td>Copper</td>
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The exports of the puerto intermedios, shipped for Europe and the United States, amount to approximately 530,507l; and as it is assumed that only one-fourth of the commerce of Peru is concentrated in these harbours, the whole exports of the country would exceed 2,000,000 l, exclusive of the commerce with Mexico, Central America, and Chile. But it must be remembered that a great part of the exports of the puerto intermedios is brought from Bolivia, as the silver, bark, vicuña and sheep wool, and copper.

History.—When the Spaniards first visited Peru, they found the country under a well-regulated government, and inhabited by a nation which had made great progress in the arts of civilization. The people were decently dressed, and lodged in comfortable houses. Their fields were well cultivated, and small and large irrigated fields; they conducted the water of the small rivers to a considerable distance for the purposes of irrigation. They had extensive manufactures of earthenware and woolen and cotton cloth, and also tools made of copper; and they knew the easy forms of their metals, made out of the hundred thousand copper tools, excite admiration. The extensive ruins of palaces and buildings scattered over the country, and the remains of the great road which led from Quito to Cuzco, and thence southward to the table-land of the valley of the Desaguadero, show that the nation was far advanced in civilization. This civilization appears to have grown up in the nation itself, and not to have been derived from combinations with the Inca. The Spaniards, however, the Peruans was limited to coasting from one small harbour to another in balsa. The difference in political institutions and in the usages of society between the Peruans and Mexicans precludes the assumption of either of these two nations having received their civilization from the other. Besides this, they were divided by savage tribes, which were sunk in the deepest barbarism. The Spaniards were surprised to find this state of things in Peru. When they had got possession of the coast, they entered into its history, and learned the following traditions:

About three centuries before the arrival of the Spaniards, Manco Capac and Mama Oollo appeared on the table-land of the Desaguadero, united the female, of majestic stature, appeared clothed in garments, and declared that they were children of the sun, and sent by their parent to reclaim the human race from its misery. The same tribe, being considered as the offspring of a divine origin, who taught them the arts of civilization, agriculture, and the manufacture of clothing. Manco Capac organised a regular government, and formed his subjects into four different ranks or classes, which had some slight resemblance to the castes of the Hindus. He also established many useful customs and laws, and founded the town of Cuzco, which soon became the capital of an extensive empire, called the empire of the Incas (or lords) of Peru. He and his successors, being considered as the offspring of the divinity, exalted absolute and uncontrollable authority: disobedience to their orders was considered a sin and violation of the commands of the Supreme Being. His successors gradually extended their power over the whole of the mountain-region between the equator and 22° S. lat. As the aborigines who inhabit this extensive country speak one language, the Quichua, it must be supposed that they belong to one race, and thus were easily united under the guidance of the castes of the Hindus. When the Spaniards first entered Peru, the twelfth monarch from the founder of the state, named Huayna Capac, was said to be seated on the throne. He had violated the truce of his predecessors, and being a monarch to marry a woman not a descendant of Manco Capac and Mama Oollo. His wife was a daughter of the vanquished king of Quito, and the son whom she had borne him, named Atahualpa, was appointed his successor in that kingdom. The rest of his dominions he left to Huasac, his eldest son by a princess of the Inca race. This led to a civil war between the two princes, and when the contest was at its height, a Spanish force entered the country under Francisco Pizarro in 1531.

Pizarro had sailed in 1526 from Panamá to a country lying farther south, which, according to the information collected from the natives, abounded in precious metals. He sailed along the coast as far south as to the Parma Capa Aguja. Landing at Tumbez in the Bay of Guayaquil, the most northern point of the present republic of Peru, he was struck with the advanced state of civilization of the inhabitants, and still more with the abundance of gold and silver vessels and utensils. From this time he resolved on the conquest of the country. In 1531 he returned with a small force which he had procured from Spain, marched along the coast as far as to the town of St. Michael de Piura, the oldest Spanish settlement in the country. The destructed state of the country caused by the civil war enabled the Spaniards to take possession of it without a battle; and though the Peruvians afterwards tried to renew their contest, it proved fruitless, and they were easily submitted to a foreign yoke. In many instances during the
progress of the conquest (from 1532 to 1554), Pizarro acted with cruelty and perfidy, but he undoubtedly possessed great political sagacity. All the large towns and provinces of Peru were built by Pizarro, with the exception of Cuzco, which was founded by Manco Capac. Pizarro built Piura, Truxillo, Lima, Arequipa, and Huamanga.

The disorders which immediately followed the conquest never subsided. The various states and districts of Cuzco had determined the course of the Spanish dominions in South America. Lima was chosen for the capital, and it soon rose to such opulence that it eclipsed the city of Cuzco. But the authority of Lima in Spain took deeper root in Peru than in any other of her South American colonies. In 1750 the Peruvians took up arms against the Spanish, under Tupac Amaro, an Inca, but they were easily subdued by the troops under the governor, and they again submitted. When all the Spanish colonies began to rise against the mother country, after the year 1810, Peru remained quiet, and though some of the neighbouring provinces had already expelled the Spanish armies, and others were attempting to do the same, the Spaniards remained in undisputed possession of Peru until 1820, and even then the first impulse to rebellion came from without. General San Martín had collected a force in the provinces of La Plata, with which he entered Chile, and, after a successful war, expelled the Spaniards from that country. In 1820 he came with an army from Valparaíso to Peru, and as soon as he had obtained possession of Lima, the independence of the republic was proclaimed. In June 1821, and San Martín was also proclaimed protector of Peru. The Spanish viceroy Canterac, who had remained in possession of the Montaña, gradually recovered the valleys. San Martin, who had lost his popularity, resigned his post, and his successor was appointed on the 21st of August, 1822. On the 1st of September, Bolivar, the Colombian general, entered Lima, and continued the war with Canterac, but at first with doubtful success. In November, 1821, the Peruvian congress, which had adopted the constitution, was dissolved in February, 1824, and Bolivar was made dictator. After some advantages gained by Bolivar over the army of the republic, the Peruvians were defeated, and the boundary of the republic was fixed on the 29th of January, 1826. In February, 1825, Bolivar had resigned the dictatorship, but he had previously consented to separate the southern provinces from the northern, and to convert the former into a federal republic, which took the name of Bolivia. The different forms of government which had been tried within the six years following the declaration of independence, were not adapted to the state of the country. The constitution of 1824 was re-adapted to it. Towards the end of 1826, the Bolivian constitution was adopted, according to which a president was to be placed at the head of the government, with the power of naming his successor, and without being subject to any responsibility for his acts. This new constitution excited great discontent, and as Bolivar was soon afterwards obliged to go to Columbia, where an insurrection had broken out and a civil war was on the point of commencing, a complete revolution took place in Peru, in January, 1827. The Bolivian constitution or government was abolished, and a new constitution framed and adopted, which may be considered as still in force. This constitution may be viewed as an attempt to unite a federal republic with a central government. The provincial governments of the departments have the power of framing laws for the provinces, but these laws do not obtain authority till they have been approved by the Congress. The provincial governments however are entitled to the uncontrolled administration of their own affairs, both civil and ecclesiastical. The national congress, or supreme legislature, consists of two bodies, a senate and a house of representatives. The provincial governor is appointed by the president for four years, and he cannot be re-elected. He is assisted in the administration of the public affairs by a ministry of his choice, and by a state council, which is elected by the legislature. The judicial power is independent of the executive, and there are four supreme courts. The highest officers of the central government in the departments are the prefects and subprefects. These persons, as well as the judges, are elected by the Congress from three candidates, who are proposed by the provincial governments. The Roman Catholic religion, which the Spanish had introduced, is still the established religion of Peru. The country has experienced, even more than the other parts of America which once were subject to Spain, the bad effects of having adopted a constitution unsuited to the state of society. The country is almost continually distracted by revolutions which are tinged with disorder, and the revolutions produced by these continual struggles. In 1835 four chiefs in arms were celebrating for supremacy. If one of them succeeded in making himself powerful, the others were united against him, and sooner or later they were again disininct and in hostility to each other. In 1836 the four southern departments, Cuzco, Ayacucho, Piuru, and Arequipa, separated from the four northern, and a kingdom was formed, with the name of Estado Sud Peruano. We do not know whether the two parts of Peru have again united under one government, or continue to form two republics.

(ULLA'S Vouage to South America, Humboldt's Personal Narrative, So.; Memoirs of General Miller; Meyen's Reise um die Welt; Peppis's Reise in Chile, Peru, &c.; Smyth's and Lowe's Narrative of a Journey from Lima to Peru; Narrative of the Surveying Voyages of the Adventure and Beagle, by Capt. R. E. F. Schiaparelli, Geographical Journal, vols. v. and vii.; Miller, in the London Geographical Journal, vol. vi.)

PERUVIAN ARCHITECTURE. Remains of ancient Peruvian buildings are frequently met with in South America, from the equator to 12° S. lat., especially over the Montaña. They are characterised by simplicity, symmetry, and solidity. There are no columns, pilasters, or arches, and the buildings exhibit a perfect regularity and a complete want of all exterior ornament.

The great road of the Incas, which runs from Cuzco to the table-land of the Desaguadero, is made of enormous masses of porphyry, and it is still nearly perfect in several places. Humboldt obtained an ancient Peruvian cutting instrument, which had been found in a mine not far from Cuzco: the material consisted of 54 parts of copper and 6 of tin, a composition which remains unaltered, which perhaps was manufactured by the Incas. With instruments made of this material the Peruvians cut the enormous masses of which their buildings are composed. Some of the buildings near Cuzco contain stones 40 feet long, 20 feet wide, and nearly 7 feet thick. These stones are fitted together with great skill, and, as it was supposed, without cement. But Humboldt discovered in some ruins a thin layer of cement, consisting of gravel and an argillaceous earth; in other places, he says, it is composed of bitumen.

The stones are all parallel, and the workmanship is conducted with such exactness that it would be impossible to perceive the joints if their exterior surface were quite level; but being a little convex, the junctures form slight depressions, which, however, are not visible to the naked eye. The thickness of the doors of the buildings is from 7 to 84 feet high. The sides of the doors are not parallel, but approach each other towards the top, a circumstance which gives to the Peruvian doorways a resemblance to those in some of the Egyptian temples. The niches, of which several occur in the inner side of the walls, have the form of the doors.

The most extensive Peruvian buildings occur in the table-land of Cuzco, which was the most ancient seat of the monarchy of the Incas. There are also antient remains within the boundaries of the present republic of Ecuador. Near the ridge called Chasineche, not far from the volcano Cotopaxi, are the ruins of a large building called the Palace of the Incas. It was a square, of which each side is about 30 yards long, and it had four doors. The interior was divided into eight apartments, three of which are still in tolerable preservation. Not far from the mountain-pass of Assuy is a building called the Palace of Cuzco, consisting of a wall of very large stones, about 5 or 6 yards high; it has a regular oval form, of which the greatest axis is nearly 40 feet long. In the ruins of the town of Cuzco another building is placed, known as Mura de Truxillo, near the boundary-line between Peru and Ecuador. Humboldt had an opportunity of observing the construction of the private buildings of the Peruvians, and he observes that they consist of one room only, and that probably the door was placed in the middle, and opened inward; the inside walls were made of adobe, and the external walls of stone (La Recolte et Monuments des Peuples Indigenes, &c.)

PERUGIA, DELEGAZIONE DI, a province of the
Papal State, is bounded on the north by the central ridge of the Apennines, which separates it from the province of Pesaro e Urbino, on the west by Tuscany, on the south by the provinces of Spoleto and Viterbo, and on the east by the province of Macerata and Spoleto. Its length from the Apennines to the Tiber is 60 miles, and its breadth varies from 20 to 35 miles. The area is reckoned at about 1790 square miles.

The banks of the Tiber are entirely to the south of the lake. The lake of Perugia (Lacus Trasimenus) lies in the territory of Perugia, near the borders of Tuscany; its circumference is about 30 miles, the greatest width is about 6 miles, and the lake contains three small islands; two of which is called Isola Maggiore) are towards the north, and the third (called Polrese) towards the southern extremity. This lake is enclosed by hills on the north, east, and south, but the western coast is more open, merging into the wide plain of Cortona. This lake is fed by no permanent river, but by numerous springs which rise from the bottom of the bed; it has no natural outlet, and in seasons of rain, when numerous streams run into it from the neighbouring hills, it suddenly overflows the banks, and sometimes the waters have entered the plain of Cortona, and mixing with those of the Chiana, have flowed into the Arno. In order to prevent the mischief occasioned by sudden floods, a tunnel or emissary has been made through a hill on the south-east side of the lake at the mouth of the streams of St. Savino, opposite the island of Polrese. The mouth of the emissary is about six feet high and five wide, and the length is 2845 feet; it is entirely cased with masonry. Seven shallow basins, called the torrente, are formed at equal distances along the length of the tunnel, and give access to the workmen for cleaning and repairing it. The water on issuing out of the tunnel flows into a canal, sets in motion several mills, and after a course of about two miles enters the river Cala, an affluent of the Nera, which is an affluent of the Tiber. The mouth of the emissary is above the ordinary or summer level, and the water flows into it only in the winter or after heavy rains. (Vestris, Dissertation on the Tiber, page 410.)

The construction of this important work is due to Braccio della Montone, a distinguished chieftain, and lord of Perugia in the beginning of the fifteenth century. Some pretend that the emissary existed long before, and was only repaired by Braccio, but there is no evidence in support of this assertion. The emissary became encumbered in course of time, and a great flood occurred in 1398, when the lake entered the plain of Cortona, and did great mischief in other places along the banks. After this misfortune, Pope Clement VIII. ordered the emissary to be repaired. Campanus, De Rebus Gestiis Andreae Brachii, 6th book, gives a pleasing description of the citizens manuring the land about the lake, the waters, its verdant and picturesque green banks, and the towns and villages scattered along the shore. Seen from the hills of Spoleo, between Ossaià and Passignano, on the high road from Florence to Perugia, the lake has a very fine appearance. This lake is subject to sudden storms.

The site of the battle between Hannibal and the Romans has been a subject of much contention among the learned. It is generally supposed to be near Passignano on the north-east side of the lake, where the hills recede from the shore, forming a kind of valley or dale between them and the lake. The province of Perugia is chiefly hilly, being crossed by ovens from east to west. The Apennines form a parallel line with the Tiber. South of the town of Perugia are some extensive plains, one of which lies eastwards towards Foligno, and another on the western or right bank of the Tiber, towards Città della Pieve. The principal affluents of the Tiber in the province of Perugia are—1. the Chiascio, which rises in the central Apennine ridge, and flowing southwards reaches the Toppino, which comes from the valley of Foligno, after which the united stream enters the Tiber; 2. the Nera, which rises near Città della Pieve, flows south of the hills which border the southern bank of the lake of Perugia, receives the Cagna from the north, and after a course of about 35 miles, falls into the Tiber. The river Nera, in an offset of the Apennines that separates the valley of the lower Nera, or of Terni, from that of the Tiber, and runs into the Tiber below the town of Todi, after a course of about 20 miles; 4. the Chiana, which is the outlet of the lake of Chiusi in Tuscany, drains the southern part of the Val di Chiana, receives the river Astrone on its right bank and the Tresa on its left, and entering the Papal territory near Città della Pieve, joins the Paglia at Orvieto, a few miles below which it enters that of Lazio.

The province of Perugia is the fourth in extent in the Papal State, being inferior only to those of Rome, Viterbo, and Spoleto e Reti. It is the most fertile of the provinces south of the Apennines. The principal productions are corn, wine, oil, silk, and grass, on which large herds of fine horned cattle are fed; nearly one half of the consumption of butcher's meat by the city of Rome is supplied by cattle fattened on these pastures. The valley of the Tiber, which forms a considerable article of export, and the shores are frequented by numerous aquatic birds. The climate is healthy, except in a few low spots on the banks of the lake and in the valley of the Chias di near Città della Pieve.

The principal towns of the province are—1. PERUGIA; 2. ASSISI; 3. NOCERA; 4. POLIGNO, a pleasant well-built town in a delightful valley on the river Toppino, a short distance from its confluence with the Marogne or Timia, which comes from Spoleto. Poligno is said to have been built about the eleventh century, being first inhabited by colonists from the antient town of Forum Flaminius, which was in the neighbourhood. It has a handsome cathedral, several other churches, a fine bridge, and a great number of stone, silks, extensive paper-mills, and 7300 inhabitants. Foligno is one of the most trading inland towns in the Papal State. It suffered considerably from the earthquake of 1832. 5. Todi, the antient Tuderium, a city first of the Umbri, next of the Etruscans, and afterwards a Roman colony, stands on a hill above the Tiber. It has a cathedral and another handsome church built after the design of Bramante, with several remains of Etruscan antiquities, among which are the town walls and the ruins of a temple of Mars. The population of Todi is 2500. 6. Città di Castello, a well-built town, with 5000 inhabitants, in the valley of the Upper Tiber, near the borders of Tuscany, containing the church of the Holy Apostles, and the palace of the former baronial family of Vitelli, known in the history of the middle ages. It has a wooden bridge over the river. 7. Città di Pieve, a small town situated on an eminence above the Chiana, has about 2000 inhabitants. Remains of antiquity have been dug up in the neighbourhood. (Brasavola, Breve Ragguglio della Città di Pieve, folio, Perugia, 1086.) 8. Marsciano, a walled town in the lower Tiber, contains the church of the Holy Apostles, and the late residence of the last of the ancient family of Vitelli, containing about 3000 inhabitants. 9. Sarnico, a town on the Tiber, contains the church of the Holy Apostles, and the parish church of the Holy Apostles, containing the territory of the commune. 11. Gualdo, at the foot of the Apennines, 8 miles north of Nocera, is near the site of the antient town of Tadum, long since ruined, near which Totila was defeated and wounded by Narses: it has about 4000 inhabitants. 12. Spello, a few miles north of Foligno, is on the site of the antient Hispella, of which there are still considerable remains; among others, a triumphal arch in honour of the emperor Marcus. Spello has several churches, with good paintings, a college, and about 2400 inhabitants. (Calzid, Storia geografica della Stato Romano, page 115.)

The province of Perugia is divided for administrative purposes into four districts, Perugia, Città di Castello, Foligno, and Todi, containing altogether 202,600 inhabitants (Serroni, Statistica d'Italia, 2nd ed., page 471). The chief places of this division are the chief cities, the ancient capital, Katha, which is mentioned by Pliny, and the chief ports. Katha is a bishop's see, and it has a long-established university, which reckons among its early professors Bartolo and Baldo. The university is now attended by between...
300 and 400 students: it has a library of 30,000 volumes, with some valuable MSS., among others a Stephanus Byz. of the councilor containing the story of the council, a cabinet of antiquities rich in Etruscan inscriptions, bronzes, vases, and medals. The academy of the fine arts has a collection of paintings by natives of Perugia and of the territory. Several notable churches are also in the city. The most palaces, such as the Marquis Monaldi, Baron della Penna, Count Staffa, Oddi, etc., Perugia has a school of music, two theatres, a dramatic academy, a casino, or assembly-rooms of the nobility, and a lottery of Perugia, a club connected with Perugia. Perugia has been distinguished among the provincial towns of the Papal State for its love of learning. A biographical list of authors natives of Perugia has been commenced by Professor Vergnolli, "Biografia degli Scrittori Peruginesi," 1807. It was also published a catalogue of writers who have illustrated the history of his native city: 'Biblioteca Storica Perugina,' 4to, Perugia, 1832. Odoloni has written 'Atheneum Augustinum in quo Perusinorum Scripta publice exponuntur.' 1678.

Passeti has written the lives of the native artists: 'Vite dei Pittori, Scultori, ed Architetti Perugini,' 4to, 1732. Brandoleni has given an account of the works published at Perugia in the first century of the present century: 'La Tipografia Perugina nel secolo V. 111. vivente,' 1807. Vergnolli has written on the mint of Perugia: 'Memorie della Zecca e delle Monete Perugine,' 8vo., 1816.

The antiquities of Perugia, both Etruscan and Roman, have been described by Pietro, V. 111. in the 'Vatican Museum, in the modern works of art by Mariotti and Morelli, 'Pitture e Sculture della Città di Perugia,' 1863, besides the common guide-books. Among the contemporary learned men of the Umbrian capital we may mention: Tietar, (translator of Pinard and professor of Greek literature), Canali (professor of physics and rector of the university), Coli (professor of law), and Antinori (a poet and professor of Italian literature). Perugia has produced several burlesque poets, Coppeta and Caporali, the latter of whom is considered by many as equal to Berni.

The population of Perugia, including the suburbs, is 15,000 (Calandrini); in the time of its independence, in the sixteenth century, the population was recorded at 40,000.

The circumference of the walls is above six miles, but much of the area within is open and unbuilt upon. The citadel, from which there is a splendid view, extending on one side along the valley of the Tiber, and on the other over the basin of the lake, the plains beyond it, and the long chain of the Apennines, was built by Pope Paul III., to keep the city in awe, and it occupies a considerable space. Perugia has some marble quarries of gilks, wood, and soap, but the principal trade consists in the products of its fertile territory, oil, wool, and cattle.

Among the many churches of Perugia, said to be above one hundred and remarkable, are the Duomo, or cathedral, the Gothic style, with some Gothic windows, Signorelli, Baroccio, and others. A painting by Perugino, representing the marriage of the Virgin, which adorned this church, was taken away at the first invasion of Bonaparte; and it is not known what has become of it. The number of masterpieces of paintings taken from Perugia by the French amounts to about thirty. Some were restored at the peace, but it seems that, instead of returning to Perugia, they have been placed in the Vatican gallery at Rome.

The church of S. Francesco was plundered of the 'Descent from the Cross,' by Raphael, at an earlier date, by Paul V., and this picture is now in the Borghese Gallery. S. Maria in Signore and S. Pietro in Convento, one of the wealthiest in the Papal State, has several paintings by Vasari.

4. The church of S. Domenico has a fine coloured glass-window in the choir, and the tomb of Pope Benedict XI., who died at Perugia in 1304, is remarkable for its sculptures.

The town-house, 'Palazzo dei Priori,' a vast Gothic building, and the residence of the delegate and of the municipal authorities, contains a most valuable collection of archives, and is a curious document of the middle ages. The old exchange, 'Sala del Cambio,' is adorned with beautiful frescoes by Perugino. The square before the cathedral contains a mausoleum, which was purchased by Ghiberti, who painted it a Disa. In the square 'Del Papa' is the bronze statue of Julius III. seated in a chair, cast by Vincenzo Danti of Perugia. The Place Grimalda has a handsome gate, said to be of Etruscan construction, but called the arch of Augustus.

The church S. Angelo is built on the site and with the materials of an ancient temple. For the Etruscan remains at Perugia, see ETRURIA (Antiquities).

Some interesting excavations are now going on at Perugia, and many objects of antiquity have just been discovered in the immediate vicinity, thereby making a new road.

(Communication from Perugia, Jan., 1840.)

Perugia was one of the principal cities of ancient Etruria, but it seems to have been built before the Etruscan dominion by a long series of Umbrian Servians, 801 B.C.

In an Etruscan inscription in the Museum Oddi it is called Perusei. Perusia acted a principal part in the wars of the Etruscans against Rome; its troops were defeated by the consul L. Fabius Maximus, and then Perusia, together with the rest of Etruria, became a Roman province, B.C. 180 (Livy, x. 31. 37.). In the second Punic war, Perusia was one of the allied towns that sent timber and provisions to Scipio to fit out his armament against Africa. During the second triumvirate, the consul Luccius Antonius, brother of Marcus the Triumphvir, was supplanted by Fulvia, his sister-in-law, having quarrelled with Octavian, and being defeated, shut himself up in the town of Perusia, where he sustained a long siege, and at last, through famine, was obliged to surrender to Octavian, who put to death 300 of the principal citizens of Perusia, and gave up the town to plunder.

Perusia was on that occasion nearly destroyed by fire. It was afterwards rebuilt under the name of Perusa, and in 75 B.C. was made a Roman municipium, and was sufficiently fortified by the Goths under Totila. It passed afterwards through the same vicissitudes as most other towns of Italy: it ruled itself for a time as a free municipality, had its facade closed by Galba, and became a Roman municipium, which was rendered a Roman municipium again, 1304, and this, in the time of the papal States, was often plundered and used as the residence of Popes. The church of S. Francesco was plundered of the 'Descent from the Cross,' by Raphael, at an earlier date, by Paul V., and this picture is now in the Borghese Gallery. S. Maria in Signore and S. Pietro in Convento, one of the wealthiest in the Papal State, has several paintings by Vasari.

Twelve miles north of Perugia, in a romantic situation among the Apennines, is the monastery of Monte Carlo, belonging to the order of Camaldoli, the monks of which have cultivated and planted with trees the surrounding territory. This monastery was one of the few that was spared to the Franciscans during their occupation of the Papal State. The monks have an asylum at the place of the reception of travellers. (Piemuda, La Storia Romana, ovvero Eremitico di Monte Corona, Venice, 1590.)

PERUGINO—PIETRO. PIETRO VANNUCCI DELLA PIETRA, called Perugino, was the son of a certain Crispiano, a poor man of Castello della Pieve, where Pietro was born, in the year 1446. His father is said to have placed him as a shop-boy (attorno) in a painter of Perugia. When about twenty-five years of age he visited Florence, and, according to Vasari, became a pupil of Andrea Verocchio, the master of Lorenzo di Credi and Leonardo da Vinci; but this fact seems very doubtful. In the course of a few years he attained considerable reputation, and his works were so much esteemed as to be exported. In 1475 we find him employed by the magistrates of Perugia, and the order for a payment to him in that year appears on the public records of the town. In 1480 he executed some frescoes in the church of S. Bartolommeo in the cloister of the Augustinian monastery of S. Maria di Spina, and in the church of S. Maria della Pieta, in the same city. In 1480 he was employed by the Duke of Urbino in the decorations of the Hall of Justice, and then executed another work for the Duke in the same city. In 1481 he executed some frescoes in the church of S. Maria della Pieta, in the same city. In 1481 he executed some frescoes in the church of S. Maria della Pieta, in the same city.

The fame of Perugino has certainly been widely spread from the circumstance of his having been the teacher of Raphael; but, at the same time, the superior genius of the
pupil has thrown into comparative obscurity the real merit of the master. Perugino was a most unequal painter: his early works are far better than those executed after 1500. The popularity of his pictures, and the facility which he had, enabled him to repeat them in great numbers. Vasari says 'he gave all his figures one and the same air,' it must however be admitted that this 'air' is far superior to the contortions of Vasari himself and his fellow-pupils in the same school. It is due to this, and to his art of lighting, that Vasari tried to set the conflict between the old and simple style and the very different principles of the great master just named. With M. Angelo himself he is reported to have had a public quarrel: Vasari says he was influenced by his master, and was received with some little suspicion. He says that Perugino was an indolent, who could never be brought to believe in the immortality of the soul, and who would do anything for money. At the same time he gives him great credit for his technical skill, and he admits that some of his works are in colouring.

Among the best pictures of Perugino now extant are:—

An Infant Christ, Virgin, and Angels, painted in 1480, and preserved in the Allani Palace at Rome; a Fresco in Santa Maria Maddalena dei Pazzi at Florence, executed in a later period; the Dead Christ, before alluded to (now in the Pitti Palace, No. 164); one or two pictures in the Accademia at Florence; and his frescoes in the Cambi at Perugia. Mr. Beckford, in this country, possesses a work of Perugino's best fame.

Raphael was a pupil of Perugino, and his early works, such as the Marriage of the Virgin, greatly resemble those of his master. (Raphael and his Pupils are among the most eminent scholars of Perugino).—Pinturicchio of Perugia; Andrea Luigi d'Ascesi, called l'Ingegno; Giovanni Spagnuolo, named Lo Spagna; and Rocco Zoppo of Florence. (Vasari, Vite dei Pittori; Remolins, Italianische Forschungen; Lanzi, Storia Pictorica.)

PERU'RIA. ([Perugia])

PERUVIAN ARCHITECTURE. ([Peru])

PERUZZI, B ALDASSA'RE, an architect less celebrated than many greatly inferior to him in design, was born in 1481, at Volterra, to which city his father Antonio had removed, in order to avoid the civil dissensions which agitated Florence. A few years afterwards Volterra itself was besieged and sacked, and Antonio fled to Siena, where the family lived in reduced circumstances, having lost nearly all their property. On his father's death, Baldassare, who had enjoyed opportunities of access to many artists and their works, determined to apply himself to painting, which he did with such masterly skill, that his works are still held in respect. As a young man he executed some small frescoes in the cathedral of Siena, near which city he died in 1537. Peruzzi was the pupil of Pietro Perugino. The first of these sallies, reckoning from the north, is the Conca, a work of engineering, which runs all along the boundary of the Province of Perugia, and toward the Adriatic in the district of Perugia, and sends off several offsets, which run to the sea, forming the natural boundary between Northern and Southern Italy. The mountain on which San Marino stands is a part of the same mass, and is united to it by offsets. Several streams run in a north-east direction from the Apennines to the sea. The first of these streams, reckoning from the north, is the Conca, which runs all along the boundary between the Province of Perugia and that of Pesaro, and after a course of about twenty-five miles enters the sea near La Cattolica. The next is the Foglia, the ancient Pisauro, which rises in the Apennines of Carpena on the Tuscan border, and after a course of forty-six miles enters the sea at the town of Pesaro. Further south is the Metauro, the largest river in the province, which rises near Borgo Pace on the east side of the Apennines that bound the valley of the upper Tiber; it runs first due east, passing by the towns of St. Angelo and Pesaro, to the sea, entering the Tiber at Pesaro, and passing through the city of Pesaro, which was anciently called Sinigalia. It was crossed by the ancient bridge of the Metauro, which rises at the Césano, which rises in the mountains of Avellana, passing the town of Pergola and the site of the ancient town of Susa, which are still visible, and enters the sea north-west of Sinigalia, after a course of about sixty miles. South-east of the Césano is the Misà, which enters the sea at Sinigalia, after a course of about twenty-five miles. The surface of the province of Pesaro e Urbino is hilly; some parts of it are entirely forested, and generally barren. The lower hills are planted with vines, olives, and mulberry-trees. Good pasture is also abundant. The province is divided into five districts—Urbino, Pesaro, Fano, Sinigalia, and Gardona, containing altogether 298,600 souls, and 25,087 inhabitants. (Sinigalia). The capital town is Pesaro, which is the old capital of the province and the residence of the former dukes. 2. Pesaro, the ancient Pisauro, a well-built town and a bishop's see, has several fine churches with some good paintings, a fine market-place, several most original and tasteful edifices of its class in that city. Instead of being perplexed by the awkwardness of the site, he skilfully disposed of it to curvè the front of the building, and thereby produce so happy an effect that such form seems to have been a model for many other buildings indepenent of other circumstances. The loggia and small inner court are singularly beautiful, and the whole edifice preserves the attention it has received in a folio work, by being pellaged of everything flat, leaving outline engravings of all its parts and details (Paris, 1818).

Peruzzi made a design for St. Peter's on the plan of a Greek cross, which has been executed in that quarter of the present structure: also two different designs for the façade of S. Petronio at Bologna. On Rome being taken and sacked by the Constable Bourbon, it was with extreme difficulty that Baldassare escaped from the hands of the soldiery, and after being pillaged of everything he had managed to reach Siena, where he was most kindly received, and employed on various buildings. He returned however to Rome, and it was then that he built the Palazzo Massaini, but did not live to see it quite completed. He died in 1536, not without suspicion of having been poisoned by a rival who sought to obtain the appointment which he held as architect of St. Peter's. He was buried in the Pantheon, near Raphael.
palaces of the nobility, and the palace of the former dukes della Rovere, who were once sovereigns of this little state, a public library of 15,000 volumes, with a museum and a cabinet of models bequeathed by Olivieri, a learned man of Pesaro, to its townsmen. Pesaro has a small harbour, several manufactories of silks, pottery and glass, and leather, and about 11,000 inhabitants. (Calidini.) The surrounding territory, which is very fruitful, produces, among other things, excellent figs, and is dotted with the remains of ancient country seats. Pesaro continues to retain a considerable trade in the agricultural products of the province. A bed of coal has been discovered in the neighbourhood. Pesaro has a civil and criminal court, and a commercial tribunal, a collection of a clerical seminary. It is the birth-place of Pandolfo Colonna, a celebrated general of the fifteenth century; of Count Perticari, a philologist and son-in-law of Monti; and of the musical composer Rossini. 3, Fano, the ancient Fannum Fortunae, is a town with about 7000 inhabitants. It has a triumphal arch dedicated to Augustus, which has been badly restored, and therefore spoiled (Poletti, Raggiamento intorno all'Arco d'Augusto in Fano), several churches with paintings by Guido and Guercino, a handsome theatre, some silk manufactories, and a public library. On the coast near Fano are taken great quantities of a small fish called 'cavallo marino,' the head of which resembles that of a horse, and has been used to make fish sauce. 4, Sinigaglia, the ancient Sena Gallica, is a bustling town, and must have bought several churches and convents, and about 8000 inhabitants. It is chiefly remarkable on account of its great fair, one of the largest in Italy, which is held in the month of July, and is visited by a large number of people from all parts of Italy, not only from its own province, but also from other countries. About 200 vessels, mostly of small burthen, of the various nations which trade in the Mediterranean, arrive at Sinigaglia at that time, and bring colossal and other produce, and also French, English, and German manufactures. The celebrated singer Madame Catalani, was a native of Sinigaglia. 5, Fossombrone, situated on a hill about a mile and a half from the ruins of Forum Sempronii, which are lower down the banks of the Metaurus, has several churches and convents, and about 4000 inhabitants. The silk spun at Fossombrone is considered the best in Italy. 6, Gubbio, the ancient Iguvium, a city of the Umbri, is situated out of the high road on the southern slope of the Apennines near the sources of the Chiascino, an affluent of the Tiber: it has several churches and other buildings worthy of notice, and about 4500 inhabitants. Old Iguvium was in a lower situation than the present town; the amphitheatre is still in tolerable preservation; eighteen of the lower arches are remaining, as well as three of the upper row. There is also an ancient tomb, with other remains of antiquity. No trace of the temple of Jupiter Anxinnus, an old deity of the Umbri, are visible at Gubbio, but the surrounding interna trafficking, which, they are to be seen three miles from Chiascino, the ancient Clavianum, not far from the post station of La Scheglia in the Apennines, on the high road called the Parlo. In this region there were former times six towns, and of the fifteenth century, the seven bronze tablets written partly in Etruscan and partly in Latin characters, and known by the name of the Egeubine tables, which are now in the museum of Gubbio. According to the interpretation of Lanzi, they relate entirely to the religious rites of the ancient Umbri. 7, Cagli, the ancient Callis, a Roman colony, on the Flaminian road, has about 3000 inhabitants, and some remains of antiquity. 8, Urbino, a town, which derives its name from pope Urban VIII., is situated on the banks of the Metaurus, has a collegiate church, a manufactory of majolica, or Delft ware, and about 4400 inhabitants. 9, Pérgola, on the Césano, has 2500 inhabitants. (Calidini.) The province of Pesaro e Urbino is very interesting for its romantic scenery, its classical recollections, and the numerous remains of antiquity which are scattered about it. The last town, known in Greek as COLA, a Sicilian swimmer, diver and diver, who lived towards the end of the fourteenth century. His name was Nicholas, and he was surnamed 'Pescé' (the fish) on account of his expertness in diving. Francesco II., the last of the Two Sicilies, employed him, and encouraged his feats. The most incredible stories are related of him; it is said that he passed whole hours under water, and whole days in the water; that he used to swim from Sicily to the Lipari Islands, carrying letters and despatches in a leathern bag. The truth seems to be that he was a most expert swimmer and diver, and that he could remain longer under water than any other person on record. He had been accustomed from his boyhood to dive for oysters and coral along the coast of his native country. It is recorded that he had learnt the art of swimming in the sea off the Point of Faro, where the current forms a whirlpool known by the name of Charybdis; and as Pesce hesitated, the king threw a golden cup into the sea, when Pesce plunged in, and all remaining, fetched the cup out of the water, brought up the cup, to which the king added a purse of gold as a gift. Pesce was induced to repeat the experiment, but he never rose again from the sea. (Kircher, Mundus Subterraneus, b. i.) We know now that the whirlpool of 'Charybdis' is that of 'Stromboli.' It is a small feature of the way, it is said, to thank the sergeant, or to become an Italian Catholic, and that at times there is very little agitation in the water. Mariotti, in his 'Riflessioni' on the lake of Perugia, speaks of a fashion man called Non Piaceni, a fisherman, who was a great swimmer and diver, like Pesce Cola of Sicily and lived almost entirely in the water. He lived till past ninety years of age.' It must be observed however that the lake of Perugia is not very deep, and the waves are not strong. PESHAVER, [AFGHANISTAN.] PESTH, the greatest commercial town and the most populous city in Hungary, is situated in 47° 30' N. lat. and 19° 4' E. long, on the left or east bank of the Danube, at the mouth of the river Liff. From the heights of the town till then nearly from west to east, makes a sudden bend to the south. On the other side of the Danube, which is here about 1500 feet broad, is the city of Ofen. [Buda.] The city of Pest (formerly 'Buda') is considered one of the largest in Europe; it is divided into about 4000 acres, including the fixed portion on the two banks, is 1500 paces in length. The city of Pest is about seven miles in circumference. It consists of five principal parts—1, the old town, which, though anticipated and irregularly built, contains some fine buildings; 2, the Leopoldstadt; or new town; 3, the Theresaistadt; 4, the Josephstadt; and 5, the Franzistadt—so named after the sovereigns in whose reigns they were built. Leopoldstadt is now joined to the old town, and the former which latter having been levelled to make room for new buildings. Leopoldstadt is built on a very regular plan. The other three parts or suburbs are separated from these two by a very broad street. Among the fifteen churches, that of the university is distinguished by its fine steeple and excellent fresco paintings. The other Roman Catholic churches, 11 in number, are not remarkable; but the Greek church on the Danube is one of the finest buildings in the city. The two Protestant churches are very plain edifices. Of the other public buildings, the following deserve notice: the great barracks built by Charles VI.; the hospital of invalids, an immense edifice begun in 1786 under Joseph II., the building of the university, which is 3000 feet long, 400 feet broad, and 200 feet high; it (it is not known to what use it was destined by that emperor; at present it serves as barracks for a regiment of artillery); the theatre, a very handsome edifice, capable of holding 7000 persons; the institute of the middling students, and the university. The university was founded in 1635 at Tyrnau. In the seventeenth and eighteenth centuries it exercised, through the powerful agency of the Jesuits, great influence over the people. In the year 1777 it was transferred by Maria Theresa to Ofen, and in 1784 by Joseph II. to Pesth. The branches of learning taught are theology, law, medicine, philosophy, philosophy, and many sciences. There are 49 professors and about 1000 students. The university has a library of 600,000 volumes, a natural history, a collection of medals, a chemical laboratory, and an anatomical and pathological collection. Dependent on it are the botanical garden, the veterinary school, the university hospital, and the observatory at Ofen, which, above 200 feet above the Danube, and is well furnished with good instruments. The National Museum, which is independent of the university, was founded in 1790, and contains a tolerably good collection of Hungarian coins and medals, and induced the Diet in 1808 to endow it. It would take a volume to describe this museum. The collection of coins and medals contains about 60,000 specimens, of which the Greek, Roman, Malay, Chinese, and Afghan, are the most valuable; besides, there are above 12,000. The gymnasia of the Pariahs has 800 scholars; and the city normal school (likewise in the courant of the Pariahs), above 400. There are eight other Catholic schools, two Greek, and two Protestant schools. The Roman Catholic
girls' school of the English ladies, as it is called, has 400 day-scholars and 40 boarders.

Though Buda is the residence of the viceroys and the capital of the kingdom, Pest is the seat of the high court of justice and of the supreme tribunal, and also of the government of the three united counties of Pesth, Pilis, and Soloth, which contains a population of 400,000 inhabitants. The manufactures are of silk, cotton, and wool, common to the various countries of Europe, on a small scale; that of tobacco is a government monopoly. Pesth however has, next to Vienna, the greatest trade of any city on the Danube. It has four fairs, each of which lasts a fortnight. The principal articles sold are manufactures and colonial products, called also by the courtiers, such as cattle, wine, wool, tobacco, and raw hides, honey, wax, &c. Above 14,000 wagons and 8000 ships are employed in conveying goods to and from the fairs, the value of which at each of them is from 16 to 17 millions of florins. The envoys of Pesth are not picturesque, the city being situated on a sandy plain, but there are some fine promenades, such as the Grove, a mile and a half from the city; the gardens of Baron Orey; and the Palantine, of Margaret and the Danube, which is laid out in walks and gardens with great taste.

Among the inhabitants are many noblemen, country gentle-

dmen, professors, judges, and lawyers. The population of Pesth consisted (1833) of 62,850 inhabitants, of whom about 40,450 were affected by the severe febrile and epidemic diseases of 1833, viz., Greeks, and 5000 Jews. With the addition of the garrison (9133 men) and the numerous strangers, the population amounts to 75,000. Pesth, though an antiquated town, is in its general aspect, a new city, having been frequently laid waste by war, and was in the possession of the Turks for nearly 160 years, who were not finally expelled till 1866. Civil war followed, and at the beginning of the eighteenth century Pesth was one of the most inconsider-
able towns in the kingdom. Its improvement may be dated from the reign of Maria Theresa, and it has since been progressive and rapid. In 1793 there were only 2500 houses: there were in 1837, 4500. The winter of 1838 was disastrous to Pest, above 2000 buildings being destroyed by fire.

Pesth, they were however, for the most part, the worst buildings in the city, and there is little doubt that the spirit of the inhabitants, aided by the munificent contributions sent to them from all parts of the empire, will, in a few years offset all traces of the devastation.

(J. v. Thiele, Das Königreich Ungarn, vol. vi.; Oester-

erische National Encyclopädie; R. E. v. Jenny, Handbuch für Reisende in Oesterreich; Blumenbach, Gemälde der Vorzeit; Trelow, Rund um Pesth.)

PESTILENCE, or PLAGUE, is a disease of so fatal and malignant a nature, that to this very circumstance it probably owes its nomenclature; but some misapprehensions and incorrectness may be got by writers having applied the terms pestilential and pestil-

ent in a generic sense to diseases specifically different; hence we read of pestilential small-pox, pestilential choler, &c. So we have the disease of the same genus, and it is called pestilence, but every pestilential disease is not plague. In casting a glance over the histories of these epidemics, it is obvious that many things are involved in obscurity. Numerous facts have however been collected, and are agreed upon by all parties, and we shall endeavour, by a comparison of these, to arrive at some definite conclusion as to the na-

ture of plague. The nosological definition of this disease by Dr. Cullen is perhaps as correct as can be given in few words, viz., the highest degree contagious, and accompanied with extreme debility. On an uncertain day of the disease, there is an eruption of buboes or carbuncles. Dr. Patrick Russell, who practised at Aleppo during the plague of 1760-1, informs us that its progress at that commencement is much the same as in the Levant as in the cities of Europe. It advances slowly, fluctuating perhaps for two or three weeks; and although at that period it generally proves fatal, yet it is often prolonged. The disease has been called pestilential, as in the cases in which the eruption is wanting constitute the most rapidly fatal type of the disease. The general de-

rangement of the system which usher in an attack of the plague, are never absent, and accompanied by the overflowing of the extremities. A sense of cold, with some shivering, which is soon followed by heat and acceleration of the pulse, with giddiness, headache, depression of strength and spirits, white tongue, vomiting or diarrhoea, and great oppression about

the precordia, are among the first symptoms of the disease. These are succeeded by a burning pain about the pit of the stomach; by a peculiar muddiness of the eyes; by coma, delirium, and other affections of the sensorium, which termi-
nate in the disease. It is well known that in the early stage of the disease, before the pathognomonic symptoms, buboes and carbuncles, have appeared. In other cases these last-mentioned symptoms are present, together with purple spots and ecchymoses, which, clinically, are as characteristic of the other malignant fevers. Though these are the ordinary symptoms of plague, they are not all invariably observed in the same individual; but many varieties occur, which chiefly have reference to the greater or less virulence of the disease, and the absence or presence of a particular symptom. A recent communication has been informed by Sydenham that in the infancy of the great plague of London scarcely a day passed but some of those who were seized with it died suddenly in the streets, without having had any previous sickness; the purple spots, which denote immediate death, coming out all over the body, even when persons were abroad about their business; whereas after it had continued for some time, it destroyed none, unless a few cases of other symptoms had preceded. Dr. Russell describes six classes or varieties of plague, in some of which the fever appears to have been very violent, while in others it was proportionally mild. The most destructive forms of the disease, according to this author, were marked by the appearance of the buboes, and the pulp, and that the sallow or never had buboes or carbuncles. The bubo how-

ever was the most frequent concomitant afterwards; car-

buncles, on the contrary, were remarked in one-third of the cases. It is observed that this disease begins earlier than the month of May, near three months after the disease began to spread. The carbuncle increased in the summer, was less common in the autumn, and very rarely was observed in the winter. The absence of bubo and carbuncle at the commencement of the plague has been one of the grounds of contention among writers as to the real nature of the disease. Dimertzbroch and some others assure us that no one symptom is pathognomonic of plague, and Dr. Russell, on the contrary, affirms that the most destructive, exists without its characteristic symptoms, can admit of no doubt. From all the evidence upon this subject that we have been able to collect, it plainly appears that authors are by no means agreed on the existence of the plague as a distinct disease. The symptoms, morbid changes, history, and mode of propagation of plague, bear so close a resemblance to those of the malignant typhus of this country, that it is difficult to regard them otherwise than as types of the same disease. The term plague has been given by the authority of Dr. MacKenzie, who resided thirty years at Constantinople. 'The annual pestilential fever of that place,' he observes, 'very much resembles that of our gouts and at times, and is only distinguished by the appearance of the skin, that is, the occurrence of the disease is not attended with buboes and carbuncles.' Sir John Pringle too observes, 'that though the hospital or gout fever may differ in species from the true plague, yet it may be accounted for, applying the same general characters to both; and is attended with similar symptoms.' The buboes which characterise plague consist of inflammatory swellings of the glands in the groin and armpits; the purulent, maxillary, and cervical glands sometimes, but less frequently, become affected. These buboes may either suppurate or gradually disperse; when suppuration occurs, it is seldom till the fever has begun to abate, and is manifestly on the decline, as about the eighth or ninth day. Carbuncles consist of inflamed carbuncles, purulently terminated. They may be seated on any part of the body. The morbid changes that are met with in the bodies of those who die from plague are very similar to what we find in typhus, yellow fever, and the other fevers of the same group; appearing in the shape of a putrid matter injected into their veins. The vessels of the brain and its membranes are gorged with a dark coloured blood; the lungs and liver present traces of inflammation or congestion of the organs in some cases; that is, the second or third day of the disease, and the heart is a pale red colour, easily torn, and full of black blood, which, according to M. Magendie, never coagulates. These changes are found in the case of Edward Jones, and the decaying, putrid, palpable organic lesion is sometimes observed in typhus and other diseases which prove rapidly fatal. No age, sex, or profession appears to enjoy an immunity from plague, nor does one attack secure the individual from future infection;
but it has been observed that old persons, women, and children suffer less frequently and severely from its attacks than robust adults. Some persons also, who exercise particular trades, as bakers, oilmen, seem to share this advantage; while some, more noted, as those employed in Egypt, to be more particularly liable to it. One law appears to be universal in all plagues, namely, that the poor are the first and chief sufferers. In Grand Cairo, Constantineople, and Aleppo, it is in the poorest, crowded, and filthiest parts of the towns, that it has been most crowded upon the poor people, that the plague commits its greatest ravages. The celebrated plague of Marseille, in the year 1720, first appeared in a part of the city noted for the world's filth, crowded state, and wretched inhabitants. It was likewise true of London, where, from the same circumstance, it obtained the appellation of the .Poors' Plague. Like many other diseases, plague is observed in two forms: first, as an indigenous and local disease, peculiar to the inhabitants of certain countries, and from which they are never entirely free; and secondly, as a raging and fatal epidemic, not confined to its original seat, although exhibiting itself there in its most intense forms. It is the epidemic variety of the disease which has engaged the attention of mankind, from the earliest times down to the present; and we shall therefore briefly pass in review some of the principal circumstances which attend its origin, progress, and termination.

The several stages that nearly all epidemics have been preceded by certain natural signs, and by a greater mortality from malignant diseases generally than at other times. Among these precursory signals great and sudden atmospheric vicissitudes have been noted. Like those which are attendant to this cause. "The year was remarkable," he observes, "for a cold and snowy winter, so that the roads were impassable and the Tiber completely frozen. This deplorable winter, whether it was from the unseasonable state of the air, which suddenly changed to an opposite state, or from some other cause, was succeeded by intense heat, pestilential and destructive to all kinds of animals. But in the great plague of Athens, of which Thucydides has given so minute a description, he says: "The number of the plague was particularly free from all other diseases; and he mentions nothing unusual as having occurred in preceding years. The city however was then greatly over-crowded with inhabitants, a great part of the population having taken refuge within the walls of Athens (ii. 16), in consequence of the war." [Pericles.] Russell informs us that the winter of 1755-6, which preceded the pestilential fever of 1758 at Aleppo, and the plague of 1759-60 to 12 in different parts of England, was unusually severe, and which, it is observed, withstood the weather for fifty years were killed. In the following summer a death ensued from the failure of the crops, and so severe a famine, that parents devoured their own children to save their wives for sale in the markets to buy food. The connection between famine and pestilence has been noticed in all ages of the world. An enormous increase of insects has frequently been observed to precede a pestilence. We are informed by Short, that in 1610 Constantinople was infested with crowds of grasshoppers of great size that devoured every green thing, and the next year (1613) the plague carried off 200,000 inhabitants of that city. In 1612, swarms of locusts laid waste the crops in England, rebelling in Provence, and in 1613 the plague appeared in different parts of France. Locusts and pestilence are frequently mentioned together in the sacred writings; and we find that the plagues of Egypt described as the four plagues in the propagation of the plague from the rivers and fountains, swarms of insects, murian among cattle, thunde and thick darkness, and a tribe of inferior diseases, to that fatal pestilence which swept away the first-born of the Egyptians. In fine, dearth or unwholesome provisions, pestilence among cattle, great abundance of insects, absence or death of birds, blight and mildew appear, with few exceptions, to have separately or conjointly preceded or attended all such calamities. Plague is usually preceded by phenomena which have been observed great mortality. Lord Bacon has observed that the lesser infections of small-pox, purple fever, agues, &c., in the preceding summer and howering all winter, do portend a great pestilence in the next season, or putrefaction riseth not to its height at once; and Dr. Mead states, as a general fact, that fevers of extraordinary malignity are the usual forerunners of plague. Indeed nearly all the most remarkable plagues of the last two centuries have been preceded by malignant fevers. The increased number of deaths from this source will be seen by an examination of the London Bills of Mortality at the three last plague epochs in this country, an abstract from which we here present, shewing the deaths from other diseases besides the plague, in 1665, 1666, and 1669, with that of the year before and after respectively.

<table>
<thead>
<tr>
<th>Year</th>
<th>Common Diseases</th>
<th>Plague</th>
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<tbody>
<tr>
<td>1625</td>
<td>15,045</td>
<td>11</td>
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<tr>
<td>1626</td>
<td>19,848</td>
<td>35,775</td>
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<tr>
<td>1626</td>
<td>7,400</td>
<td>134</td>
</tr>
<tr>
<td>1633</td>
<td>10,651</td>
<td>150</td>
</tr>
<tr>
<td>1637</td>
<td>12,139</td>
<td>10,400</td>
</tr>
<tr>
<td>1664</td>
<td>18,291</td>
<td>6</td>
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<tr>
<td>1665</td>
<td>28,710</td>
<td>68,351</td>
</tr>
<tr>
<td>1666</td>
<td>10,849</td>
<td>1,998</td>
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</table>

The season of the year in which pestilence commits its greatest ravages differs in different countries. In Europe it has invariably raged most violently and fatally in the summer and autumnal months, especially in September. Thus, in the plague of London in 1665, the deaths from the plague were: in July, 2,046; in August, 26,430; in September, 26,530; in October, 14,373; in November, 3,449; and in December they were under 1,000. In Egypt it commences in the autumn, and prevails till the beginning of January, and the vernal climate is that of the greatest fatalit. Extreme of heat and cold generally arrest its progress. In tropical climates the disease is unknown, and in Egypt, according to Alpinus, to whatever degree pestilence may be raging, as soon as the sun rises Cancer begins, the cold weather of northern climates has been observed to check the ravages of plague; and in countries when it has broken out in the autumn, its course has been arrested during the winter months, and the gradual progress and termination of plague, the disease appears to be subject to the same laws as regulate the course and termination of other epidemics: it is most fatal at its first outbreak, and becomes less virulent as it increases in extent. The increased mortality which occurs during the advance of plague, and which we have before shown to be at its height in the month of September, arises from the increased extension and not from the greater malignancy of the disease. With this progressive increase and decrease in the whole train of diseases, and those which had immediately preceded plague, on its decline reappeared. The former fact will be seen by a reference to the annual number of deaths in London.

The causes of pestilence have been referred by some to a vitiated atmosphere, engendered by epidemic and endemic causes, and wholly independent of contagion; while others have attributed it solely to the latter influence. The truth probably lies between these extremes, and we have little doubt, from an examination of the evidence on both sides of the question, that both these causes do occasionally operate in the propagation of plague. As the foundation of quarantine establishments rested solely on the supposition of the contagious nature of plague, we shall examine how far this can be supported by a reference to facts. It is asserted by the contagionists that plague is transferred from individual to individual in all the uncertain modes in which diseases are thus communicated—by contact, by inoculation with the matter of buboes, through the atmosphere, and by fomites. According to them, its appearance in Western Europe has been always owing to imported contagion; and where strict isolation from all infected individuals and articles has been observed, there it has never appeared. It is admitted however by several, among whom may be mentioned the respected names of Sydenham, Russell, and Mead, that a particular atmospheric condition is essential to the spread of pestilence; yet they maintain that this is inadequate to its production without importation by fomites, or the arrival of a diseased person from an infected district. In support of the opinion we refer to the histories of the different plagues that have visited Europe, and above all to that which ravaged Marseille in the year 1720. Its introduction into this city was traced to the arrival of three ships
or insectors, which, by some means or other, for we learn not how, communicated the disease to a woman living in the Rue de l'Escale. This person being received into the Hôtel-Dieu, died on the twenty-third of January, and the matron who changed the linens, were taken ill the next day, and died after a few hours. In a short time it destroyed physicians, surgeons, apothecaries, confessors, and all the other officers and servants, with the whole of the patients. The disease extended in every direction. Priests and monks who attended the infected, suffered in the same manner as the medical attendants: and lastly, of 230 galley-slaves, employed in going into the infected houses and burying the dead, 220 perished in the space of ten or twelve days. Many of these facts however may be not in- 

spitely termed false facts; and some, of undoubted existence, that are brought forward as examples of contagion, may be easily explained by the vegetable and animal effluvia, from a number of persons crowded into a small space, and surrounded by their own filth, acquire a high degree of virulence, even without the morbid action of a fecal affection. If then, to the circumstances above noticed, are superadded corrupt food and the influence of a sickly season, is it surprising that mismaata endowed with a most pestilential contagious power should be generated? But this rapid transit of plague from one individual to an- other is not the only mode of its propagation. It is also established that a number of expurgators, in the elloquent language of Dr. Hancock, * Egypt disowns it; Ethiopia has no such progeny; Syria is too genial for its production; and Constantinople harbours it through neglect of its plague houses.*

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whether it be for five minutes or for five years. So if the same workshop, to be successively or almost simultaneously attacked? Yet nobody attributes the circumstance to contagion: certainly, if one had a motive for so doing, nothing would be easier than to accumulate examples without a scruple, from the remote to the recent; and then contagion may have in the propagation of the plague, it is quite certain that its power has been greatly overrated. According to the most staunch supporters of this doctrine, a number of signs and symptoms from all parts of the kingdom and they all admit that whenever the plague has been excited out of its proper season, it has not spread. Without being understood to advocate the contagious origin of plague, we fully agree with Dr. Bancroft, that it is fortunate for man- kind that the communication of the contagion of the plague depends upon the cooperation of so many favourable cir- cumstances, and particularly upon that of a suitable temper- ature, and of certain aptitudes and susceptibilities in the human subject; for without such requisites, or such ob- stacles to its propagation, the earth might have long since become desolate.* Those who contend for the non-contagiousness of plague, and therefore for the abolition of the quarantine, or for the disowning it in the Hôtel-Dieu, where it is said to have been once introduced and remained, have not succeeded in shutting out the plague from pestilential districts; and that countries not possessing indigenous sources of pestilence are not visited with this disease, is not at all established by experience. They likewise adduce numerous instances of persons in constant communication with plague patients, and even wearing their clothes, escaping the disease. Odessa has one of the best organised quarantine establishments in the world; yet not long ago the plague broke out in it, entered the town, destroyed a number of inhabitants, and ceased at a particular season. In 1835 the barest of the plagues of Egypt consisted of about 300 persons; but notwithstanding the severe precautions which the plague office, and seven died within. The cordon was composed of 500 men, who were in constant contact with the town, where the disease was raging violently; of these only three died, so that the proportion of those who perished within that region was nearly as 4 to 1. The plague of 1665, which ravaged most parts of this kingdom, never visited Oxford, although the terms were kept there, and the court and both houses of parliament, and all the magnificent establishments between this city and the metropolis, where it was raging. The Persians, although their country is every year surrounded by the plague, seldom suffer anything by it themselves. The Turks and Moors,* says Bruce, im- mediately after St. John's day, expose in the market-places the clothes of the many thousands that have died of the plague during its late continuance; and though these con- sist of furs, cotton, silk, and woollen clothes, which are stuffs too soft or too light to cause any venum to those who wear them.' Clot Bey, who is at the head of the medical department in Egypt, and has treated thousands of cases, says, that removed from malaria or misan, he has never known the plague to be communicated by contact. It has twice visited this country, with the greatest frequency and blood of those affected with plague, but without producing the disease.

This fully agrees with the evidence that was given before a select committee of the House of Commons, on the conduct of plague business in England. It is one of the Returns, that none of the expurgators of goods in Great Britain, at the quarantine establishments, have ever taken the plague. What then are we to regard as the cause of pestilence, and whence is it to be sought? Undoubtedly in the miasm of pestiferous soils; or of crowded, ill-ventilated, and filthy localities. When plague has at any time become epidemic, these are the spots in which it has first planted itself; and in those parts of the kingdom where there is animal effluvia, from a number of persons crowded into a small space, and surrounded by their own filth, acquire a high degree of virulence, even without the morbid action of a fecal affection. If then, to the circumstances above noticed, are superadded corrupt food and the influence of a sickly season, is it surprising that mismaata endowed with a most pestilential contagious power should be generated? But this rapid transit of plague from one individual to another is not the only mode of its propagation. It is also established that a number of expurgators, in the elloquent language of Dr. Hancock, * Egypt disowns it; Ethiopia has no such progeny; Syria is too genial for its production; and Constantinople harbours it through neglect of its plague houses.*

Notwithstanding the obviousness of this fact, it is a remarkable circumstance in connection with the history of plague, that no people in the world have been willing to acknowledge their own country to be the first or indigenous seat of pestilence. The doctrine that is imparted and not indigenous, is as prevalent in Turkey as it is in Egypt. The Egyptian Levantines insist that it has never been an Egyptian endemic, but has been imported by travellers or solders from the south; and their evidence is formidable. In the eloquent language of Dr. Hancock,* Egypt disowns it; Ethiopia has no such progeny; Syria is too genial for its production; and Constantinople harbours it through neglect of its plague houses.*

Facts however are too numerous and weighty to allow us a moment's hesitation on this point. Wherever civilization has existed, the plague has reeded, till it is now only to be found rising in movements; as in Egypt or revelling in the fith of Constantinople. It is the spring, we have seen, that is so fatal to the Egyptians, about which the south winds prevail, loaded with puriti emana- tions from the swamps, the exhalations of the town, which are formed by the retiring waters of the Nile. In June, the wind is in the north, passing over the Mediterranean, and this is the most healthy and salubrious season. In Con- stantinople, the month of August is most fatal, and this is the season of the year when decomposition goes on with greatest rapidity. The exemption of the city of Oxford, in the plague of 1665, is a strong proof of the correctness of these opinions. The springing words from Quincy are much to the purpose: *Dr. Plott observes, the reasons why Ox- ford is now much more healthful than formerly, to be, the enlargement of the city, whereby the inhabitants, who are not proportionately increased, are not so close crowded to- gether; but this, however, is far from being sufficient, and is not clear from fifth. For “formerly,” he says, “they used to kill all manner of cattle within the walls, and suffer their dung and offals to lie in the streets. Moreover about those times, the ISLAMIC inhabitants, who are not closely inhabited by the townsman, being filled with mud, and the common- shores by such means stopped, did cause the ascet of malignant vapours whenever there happened to be a flood. But since that, by the care and at the charge of Richard Fox, bishop of Winchester, in the year 1517, those rivers were cleansed, and more trenches cut for the water's free passage, the town has continued in a very healthful condition, and in a particular manner so free from pestilential diseases, that the sickness which reigned in 1665, which ravaged most parts of the kingdom, never visited any person there, although the terms were there kept, and the court and both houses of parlia- ment did there reside.* Now what was done in Oxford, as early as 1517, to remedy its unhealthiness, has since been done in all the principal cities of this country and on the Continent. Accordingly we find that the plague has not visited us since 1665. Holland, which has no system of sanitary, he contend, has been the more in danger to that of our own country. Paris has not been attacked since 1688, and a century has elapsed since the plague of Mar- selle.

**Treatment of Plague.**—The preventive treatment of plague will be gathered from what we have said respecting the causes of this disease, and the most effectual barriers that can be opposed to its future introduction into Europe, are, to adopt again the language of Dr. Hancock, * the barriers of cleanliness, of healthy and crowded habitations; the barrier of Christian charity*
towards our poor against famine and distress; the barrier of peace against the desolating evils of war; and the barrier of industry against the vice of sloth." With regard to remedial measures, it appears little can be done towards arresting the progress of plague after it has once declared itself in an individual. Our efforts therefore are limited to removing the patient from those sources of misanthropy which gave origin to his disease, and in placing him in those conditions which are most favourable for his recovery. Free exposure to fresh air, supporting the strength, and regulating the secretions, are the only means which promise much chance of success. When this plan is adopted, we have the authority of our latest writers on this subject for declaring that the mortality of the disease may be considerably diminished. Thirty per cent. only, of those attacked, die under this mode of treatment; while in the lazaretto at Alexandria, 90 per cent. died in 1853, and 77 in 1838. With respect to the management of buboes and carbuncles, they must be treated in the way which is found efficacious in their removal when uncomplicated with plague, and if by these means we are unable to effect their disunion, suppuration may be promoted by the employment of emollient cataplasms or any other mild stimulant.

In the following chronological table of some of the principal plagues upon record, we have purposely omitted the mention of others, although known. Under that name, are obviously a different disease; even among those we have selected, the vagueness with which the symptoms of some are described, leave us in doubt whether the disease was the same as that which at present goes under the name of plague:—

<table>
<thead>
<tr>
<th>Year</th>
<th>Place</th>
<th>Cause</th>
<th>Details</th>
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<tbody>
<tr>
<td>1490</td>
<td>Egypt</td>
<td>Exodus, xii.</td>
<td>in the Wilderness. Numbers, xii.</td>
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<tr>
<td>1520</td>
<td>Oficina</td>
<td>Ovid's Metam. lib. vii. 323.</td>
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<tr>
<td>1190</td>
<td>Grecian camp at siege of Troy</td>
<td>Homer's Iliad, book i.</td>
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<td>1017</td>
<td>Canaan</td>
<td>2 Sam, xxiv.</td>
<td></td>
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<tr>
<td>738</td>
<td>Rome</td>
<td>Plutarch's Life of Romulus.</td>
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<tr>
<td>640</td>
<td>Livy, iii. 6; Dion. Halicar. lib. x.</td>
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<td>437</td>
<td>Livy, iii. 20.</td>
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<td>430</td>
<td>Livy, iv. 21.</td>
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<tr>
<td>366</td>
<td>Athens</td>
<td>Thucydid. i. 48, &amp;c.</td>
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<tr>
<td>404</td>
<td>Livy, xix. 2; Diod. xiii. 40.</td>
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<tr>
<td>296</td>
<td>Livy, vi. 1; Short on Air.</td>
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<tr>
<td>296</td>
<td>Livy, x. 31, &amp;c.</td>
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<tr>
<td>187</td>
<td>Constantinople</td>
<td>Orosius, iii.</td>
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<tr>
<td>65</td>
<td>Rome</td>
<td>Tacitus, Annals, xx. 47; xvi. 13; Orosius, lib. vii.</td>
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<td>187</td>
<td>Rome</td>
<td>Universalis, hist. vii. 139.</td>
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<tr>
<td>160</td>
<td>Rome</td>
<td>Frontinus, De Bello Civ., iii. 17. 25 years ago, Rome was a large part of the known world. Am. Marcellinu, lib. xxiii.</td>
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<tr>
<td>187</td>
<td>Rome and Italy</td>
<td>Herod. lib. i.</td>
<td></td>
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<tr>
<td>407</td>
<td>Most of Europe, Asia, and Africa. Nephonius, xii. 6 and 36; Magdeburg, cent. v. 13.</td>
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<tr>
<td>545-550</td>
<td>A plague raging, with intermissions, in most parts of the world. Niesv., xvii. 15; Eccles. Hist. lib. iv. 29.</td>
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<tr>
<td>1345-1350</td>
<td>Europe, and most parts of the world. Bocac- cio, Decameron, Prima Giornata; Muratori, iii. 588.</td>
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<tr>
<td>1345-1350</td>
<td>Short on Air. vol. i. 165; Universalis, hist. vol. xxiii.</td>
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<tr>
<td>1362 and 1663</td>
<td>London and most of the principal cities of Europe. Short, vol. i. 1; Thuanus.</td>
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<td>1573 and 1575</td>
<td>Italy and most parts of Europe. Thuanus, lib. iii. 8; Short, vol. i.; Mercureanis On the Plague of Venice.</td>
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<td>1569 and 1681</td>
<td>Grand Cairo and different parts of France. Thuanus.</td>
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<td>1600 and 1662</td>
<td>London and various parts of Europe. Maitland's Hist. of London; Mignot, Hist. of the Turkish Empire, p. 256.</td>
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<td>1625</td>
<td>London and various parts of Europe. Short.</td>
<td></td>
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<tr>
<td>1635 and 1636</td>
<td>London, Nimeguen, and several other places in Europe. Dierenbroeck, Tractatus de Peste.</td>
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<tr>
<td>1650</td>
<td>Erotopus and several parts of Europe were severely, three-fourths of its inhabitants having perished. Univ. Hist., vol. xxvii. 319.</td>
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<tr>
<td>1653-65</td>
<td>London and most parts of England and Hol- land. Sydenham; City Remembrancer; Hive's London.</td>
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<tr>
<td>1702-11</td>
<td>North of Europe. Described, especially as it appeared in Danzig, by Dr. Gottwald; and Univ. Hist., vol. xxxv.</td>
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<tr>
<td>1750</td>
<td>Of Malta. Chicoynens' Trait de la Peste; Bertrand's Relation Hist. de la Peste de Marseille.</td>
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<tr>
<td>1743</td>
<td>Aleppo. Its Natural History, by Dr. Alex. Russell.</td>
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<td>1760-67</td>
<td>The same.</td>
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<td>1850</td>
<td>The same.</td>
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<tr>
<td>1770 and 1771</td>
<td>Constantinople, Poland, and Russia.</td>
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person who has been dead for some time. The urine is usually suppressed throughout the whole of this stage; but the dejections, becoming thinner and thinner, continue to the last. Some patients, although blue, cold, and pulseless, have been called by the formes of death. The intestines were not cast off into the die of exhaustion before all these symptoms had declared themselves. In the majority of cases the spasmodic symptoms are first observed, and afterwards the collapse: the former are due either to the Indian Ague, which has the most carnage second, by the suppression of voice, urine, and heat. If however the patient get over the cold stage, that of reaction commences. The coldness and blueness gradually disappear; the pulse returns, increasing in force and frequency; to the appearance of the second breath, to the red highlights; the tongue, which was of a dirty white, becomes cleaner and dry; vomitings are less frequent, but diarrhoea continues; and there is some tenderness of the abdomen, with thirst, great disgust of food and intense headache. The urine however is secreted; and if all goes on well, at the end of two or three days the features assume their usual expression; the stools are less frequent and more natural; the strength and appetite begin to return; the pulse resumes its ordinary character; and the patient is convalescent. Several varieties occur in the duration and intensity of cholera, and complications are sometimes produced of a character less fatal than the disease itself. Informed by D. Purdy, that soldiers attacked in full march will retire from the ranks, lay down their arms by the road side, and expire in two hours. During the prevalence of the last epidemic in India, several instances were heard of at Houbiley and elsewhere of soldiers retiring without a struggle, which were seen by the disease while walking in the open air; they fell down, retched a little, complained of vertigo, deafness, and blindness, and expired in a few minutes. This rapidly fatal form of cholera has not been observed in this country. The most severe cases that we have met with generally lasted five or six hours; but the average duration of the fatal cases, when they did not terminate in consecutive fever, was from twenty to fourteen hours. When reaction was established and fever followed, the duration of the fever was from four to ten days. As a general rule to guide us in forming a prognosis, it may be stated that the more complete is the collapse, the greater is the danger; and if the patient survive it, the more violent and malignant is the subsequent fever. The cases in which spasms and vomitings are most violent are by no means the most dangerous.

Morbid Anatomy of Cholera.—Dissection presents us with nothing satisfactory by which we can judge of the nature of the disease. There is general venous congestion of all the important organs in the body; but it is rare that any traces of inflammation are discovered. The gall-bladder is mostly distended, and is usually found to be dilated, and the stomach and intestines is found either a transparent or a turbid serous fluid, mixed with a white opake substance in the form of flakes, and similar in all respects to the matters ejected during life. The mucous membrane lining the intestines is blue and swollen. Of the bowels, it is somewhat more soft and pulpy than in its natural condition; but occasionally some degree of vascularity is observed. The urinary bladder is empty and contracted. With respect to the blood, it is found to be more viscous, and darker coloured than natural, which arises from a deficiency of its saline and watery components, and a relative increase of its solid constituents. In 1000 parts of serum, Dr. O'Shaugnessy found 1238 parts of albumen, whereas healthy serum contains only 78 parts. On comparing the blood with the matter found in the intestines, it is manifest that the latter contains all the ingredients of the blood, except the red globules; and that the aqueous and saline parts pass out of the circulation more rapidly than the albuminous.

History and Statistics of Cholera.—The last outbreak of pestilential cholera, which commenced in India and travelled over the world, has perhaps been the most observed and best of any similar visitation: the observations we shall have to make will therefore chiefly relate to this epidemic. It originated in the delta of the Ganges, about the end of May or the beginning of June, 1817. During that year it did not extend beyond the territory of Lower Bengal; but in 1818 and the early part of 1819 it diffused itself throughout the extreme length and breadth of the Indian peninsula, yet leaving untouched many districts placed between its lines of movement. Its progress along the lines selected was wonderfully uniform, being, for some successive months, at the rate of about one degree in a month. As early as 1818, it extended itself beyond the boundaries of the Indian Peninsula, and in the following year the populous and numerous islands of the Sea of Japan, Japan, and the eastern coasts of China, all suffered its invasion in 1819, and some cases occurred in the same year at one point in Bourbon. In 1821 it extended along the shores of the Persian Gulf, and, during this and the following year, spread through parts of Arabia, Persia, and Persia, and China, and finally reached the borders of Egypt in the Russian territories in 1823, at Tellhis, Orenburg, and Astrakan; but its further northern and western progress was stopped for a time. It however reappeared in Orenburg in 1828, and again in 1829, and in 1830 advanced through the southern provinces of the Russian empire, till it reached Moscow on the 28th of September of that year, and Petersburg the year following. Warsaw was attacked in March, 1831; Danzig in May; Berlin, in August; Hamburg and Sunderland in October; and London and Paris in 1832. At the end of 1833 it had reached Mexico and several other parts of America. We see that the course of this epidemic is principally from east to west, and it was observed that prevalent it appears in all parts of the world, and during its continuance, easterly winds were uncommonly prevalent; but most accurate and extensive meteorological observations, made daily during the continuance of the disease, while the various abductions of the barometer, its fluctuations, the change of wind, nor the prevalence nor absence of moisture, affect in the slightest degree its duration or intensity. Bowel complaints appear to have preceded the cholera, or low localities bordering on a port or river. Among this class of individuals whole families were sometimes cut off by it; indeed it is a peculiar feature of epidemic cholera that its ravages are confined almost exclusively to the poor. When the disease has appeared in a family occupying a station in life above the labouring class, we have the authority of Dr. Brown for declaring that in every case it has been confined, and that no cases have been recorded of its spread to the other members of the family. The mortality from this disease is very great; but it varies somewhat in different countries and at different stages of its epidemic career. During its early prevalence in India, in 1817 and 1818, we learn from the Report of the Bengal Civil, that the fatality was about one in five; and in the Bengal Military, that the fatality was one in four. In 1825, the Bengal Medical, that the fatality was one in thirty; and in 1828, the Bengal Statistical, that the fatality was one in fifty. This is strikingly exemplified by the statistical records kept at our different military stations in various parts of the world. In all situations and under all modes of treatment, about one in two died of the cases in civil, and one in three of those in the military hospitals; a result which can be attributed to the strict surveillance exercised over the troops, by which nearly one-half of the cases among them were noticed in the premorbid stage, and consequently could not recover. The mortality among the soldiers in the civil hospitals, where the great majority of the patients were far advanced in the disease before they applied for medical aid. Of the severe cases however the mortality is still higher, and the mortality, however low it may be, is one of the most extraordinary features of this epidemic, observes Major Tulloch, that the proportion of deaths to the number attacked has been very nearly alike in all the military commands of which the medical records have been investigated: for instance—In the United Kingdom, the
deaths were 1 in 32; in Gibraltar, 1 in 32; in Nova Scotia, 1 in 32; in Canada, 1 in 32; in Honduras, 1 in 32; in the Mauritius, 1 in 84. The Mauritius appears to be the only exception to this; so that either the epidemic was less severe in its character, or the remedies employed were more successful.

The influence of age on the mortality of this disease among the troops of the line serving in Canada is exemplified in the following table:

<table>
<thead>
<tr>
<th>Age</th>
<th>Ratio of Deaths at each Age, per 1000 of Strength, by Epidemic Cholera.</th>
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</thead>
<tbody>
<tr>
<td>Under 18</td>
<td>15:5</td>
</tr>
<tr>
<td>18 to 25</td>
<td>22</td>
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<tr>
<td>25 to 33</td>
<td>23</td>
</tr>
<tr>
<td>33 to 40</td>
<td>40:5</td>
</tr>
<tr>
<td>40 to 50</td>
<td>70:6</td>
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It appears from the authority to which we are indebted for the foregoing table, that females were attacked in very nearly the same proportion as males, but that the cases proved more generally fatal. Children were in a great measure exempt, though, when attacked, they rapidly sunk under.

The greater mortality of the disease in females has also been observed in this country. Dr. Ogden informs us that 14 of 45 fatal cases of cholera at Sunderland, 63 were males and 82 females. The information of this kind we possess is often imperfect, and in the different races of mankind is rather meagre. The native Indians of North America suffered from it in an equal degree with the white population; and the same was observed with regard to the Siouks and Nebrasca. In the latter occasion 9,847 cases, of whose population in 1831 was 90,000, of which 25,000 were whites and the rest coloured, the total number of deaths recorded in the civil and military hospitals was 1327. Of these 158 were whites; the rest coloured, and 982 Negroes. The latter appear to be less perfectly exempt from the disease than the other classes, and particularly Negroes, to a greater degree peculiarly subject to the disease. This great susceptibility of negroes to the invasion of disease, when absent from their native land, we have had occasion to notice in the article on microbe; and the same fact to have been admitted by effect in which their susceptibility appears, from a comparison of the mortality among them in the present epidemic with that which took place during a similar epidemic in this island in the year 1775. At this date, more than 2000 out of 4500 slaves belonging to government were cut off by it, and of those belonging to the planters nearly as many.

Causes of Cholera.—That the whole series of phenomena result from the action of a morbid poison on the body, there can be no doubt; that this morbid matter is indigenus to some countries, and apparently has its origin in certain peculiar conditions of the soil, is supposed to be true from the effects which we find to be produced upon animal bodies living in the same parts. But even from the overflow of the Nile should produce plague; that of the Ganges, cholera; that of the parts situated in the tropics, yellow fever; or our own marshes, simple intermittent—we are entirely ignorant; nor can we, in the present stage of our knowledge, correctly ascertain the causes and spread of some of these endemic diseases. The doctrine of contagion has been had recourse to in cholera, as in many other diseases, in order to explain its diffusion, and it has been asserted by the advocates of the exclusive operation of this principle, that the disease has always been found to move in the line of human intercourse; and it must be acknowledged, observes Dr. Brown, that while so migratory an animal as man inhabits the last, it cannot well do otherwise. But if it is meant to be asserted that its diffusion has been in proportion to the intercourse between infected and healthy districts, the assertion is by no means supported by facts. Its diffusion, far into this country, according to this doctrine, it ought to have been conveyed almost three months earlier by trading vessels from the infected districts, was simultaneous with its appearance in parallel latitudes in the interior. It did not reach Ceylon, to which, on the contiguous principle, it ought to have been transmitted much earlier by shipping from the infected points of the coast, until it had previously gained the nearest point to it on the continent, and had been long prevalent on both coasts of the peninsula; an introduction into this country likewise, supposed it to be imported, so far from following the great routes of human intercourse, it chose one of the least frequent paths. The principal evidence on this point, which it has become the task of the writers to negative its contagious character; and the advocates of the contrary opinion are at present by far the more numerous.

Of fifteen medical reporters in India who had observed the disease, two only thought it contagious, eight were of a contrary opinion, and five were doubtful. The medical men who were the sufferers at疨; and it is interesting in their opinion that the disease was not contagious. In the same ward with the cholera patients in the civil hospital were several persons labouring under other diseases, who, although investigated and frequently seen by assistants in attendance on those suffering under the epidemic, were in no instance affected by it. In the military hospital too it was observed that the orders employed in attendance on the sick were not attacked in a greater proportion than others who were employed in the same capacity; and the soldiers in constant attendance on the sick during the prevalence of the epidemic, all of whom, from the nature of their duties, were subject to great fatigue and anxiety, only one or two exhibited symptoms of the disease, and these were comparatively slight. Nevertheless it is probable that under some circumstances cholera may be contagious, and this opinion derives support from the great mortality which was always observed under the operation of the quarantine laws, on the intuitions of which, in this disease at least, all medical men are agreed. The predisposing causes of cholera may be gathered from its history. The poor, the old, the infirm, and the dissipated were the principal sufferers. In the north of England and the Fens, in the summer of the year 1817, even the most healthy, particularly the females, were attacked with great mortality, owing, it was supposed, to the excesses committed on the two or three preceding days. Hence every circumstance which tends to debilitate the system generally, whether by means of excessive idleness, exposure to the elements in an unhealthy locality, by unwashed or insufficient food, by the abuse of spirituous liquors, or by debauchery, acts as a predisposing cause in the production of cholera.

Treatment of Cholera.—Premising, in a prophylactic point of view, the superiority of avoiding all the predisposing causes of cholera to the absurd practice of swallowing specifics against the disease, our treatment must be regulated according to the state in which the patient is found. As the disease is the most rapidly fatal, owing to the necessity of the stools only are present, the stomach should be unloaded by an emetic, and a table-spoonful oft good mustard constitutes a very efficient one. The diarrhoea may be treated by a full dose of calomel and opium, combined with some aromatic, and a blister should be applied to the abdomen. Bleeding also has been recommended at this period of the disorder. If the patient is already in a state of collapse, the various modes of treatment which have been adopted prove how little is to be expected when the disease has advanced to this stage. Major Tulloch informs us that the principal remedy of the American aborigines consisted in merely swallowing large quantities of charcoal mixed with water; yet very nearly the same proportion of mortality, however which has excerted most attention is that by salines. Medical men, guided by chemical analysis, conceived the project of supplying by artificial means the serum which was found wanting in the blood. With this view lavements and potions of an alkaline solution, resembling serum in composition, were administered; but not being able by this means to arrest the vomiting, it was recommended and put into practice by Dr. Latta of Leith to inject the same fluid into the veins. This was first done by means of one of Reid's syringes, the temperature of the solution being kept at from 108° to 110° Fahr. Of 74 bad cases treated in this method, 22 recovered, and in general the effect was very beneficial. But this however which has excited most attention is that by salines. Medical men, guided by chemical analysis, conceived the project of supplying by artificial means the serum which was found wanting in the blood. With this view lavements and potions of an alkaline solution, resembling serum in composition, were administered; but not being able by this means to arrest the vomiting, it was recommended and put into practice by Dr. Latta of Leith to inject the same fluid into the veins. This was first done by means of one of Reid's syringes, the temperature of the solution being kept at from 108° to 110° Fahr. Of 74 bad cases treated in this method, 22 recovered, and in general the effect was very beneficial. But this however which has excited most attention is that by salines.
PET/CHILE are small spots of a dark red color produced by the effusion of drops of blood in the skin just beneath the cuticle. At first sight they look very like flea-bites, but they do not disappear when they are pressed with the finger. They usually indicate an altered state of the blood, and a morbid condition of the tissues. By recommending the injections, the same beneficial results are obtained, and, provided this treatment prove successful, the patient does not again relapse into his former condition, but the disease, as a rule, diminishes, and reaction commences. With respect to the treatment of the febrile stage of cholera little need be said. The same recognised principles that are applicable to the treatment of pyrexia in general may be used in treating this disease; and it should never be neglected to impress upon his patient the probability of a relapse, if he should indulge too soon in any dietetic or other irregularities.

PETAL is one of the inner divisions of the organs clothing the flower, and called floral envelopes. There are usually double, the outer being a calyx composed of sepals, and the inner a corolla composed of petals. Both these parts are leaves incompletely organised. The petal, being fugitive, and of very temporary utility, is generally the more delicate, containing no woody tissue to protect the spiral vessels. It is sometimes of extraordinary size, but is as frequently a very minute body. [CORolla; MORPHOLOGY; FLOWER.]

PETALIT or PETALITAE, a mineral which occurs massive. Structure perfectly lamellar in one direction. Cleavage parallel to the lateral planes, and both diagonals of a rhombic prism. Fracture uneven, Hardness 5 1/2. Brittle. Colours greyish, greenish or golden-yellow. Streaks pale yellow or greenishinclining to resinous. Translucent. Specifie gravity 2 2/3 to 2 4/3. When heated in acids, it undergoes partial decomposition; emits a blue phosphorescent light when gently heated. When by itself, it melts with difficulty, and that easily on the edges; but with borax, it fuses into a colourless glass.

It occurs at Ulm in Sweden, and in North America. It commonly occurs in Goniophyllum, Silliman, 1807; Alumina, 1741; Lithia, 4:16; Lime, 6:32; Water, 2:17.

PETARD. [ARTillery.]

PETEAVUS. [MARSHALLIA, vol. XIV, pp. 460, 461.]

PETAVIUS, DIONYSIUS, PETAVIUS, born at Orleans, in 1583, studied at Paris, and afterwards entered the order of the Jesuits. He lectured on rhetoric in the colleges of Rheims, La Fliche, and lastly at Paris, in which he was made professor of theology in 1611. He applied himself specially to the study of history, and became a distinguished scholar and critic. In 1627 he published his great work on chronology, 'De Doctrina Temporum,' 2 vols. folio, which was republished with considerable additions by the Rev. Mr. W. Parkhurst, 3 vols. folio, Antwerp, 1703. The 'Doctrina Temporum' consists of 13 books. In the first 8 books, Petavius discusses the principles of the science of chronology, antient and modern; in books 9 to 12, he examines the application of chronology to history, the various eras, &c.: and in the last or 13th book he gives chronological tables of the principal events from the creation to the reign of Justinian. After the publication of the work, Philip IV. invited Petavius to Madrid to fill the chair of history, but Petavius declined the offer, as well as an invitation to go to Rome by Pope Urban VIII, preferring the tranquillity of his cell in the Jesuits' college of Clermont at Paris, where he died in 1637. Before he died, he published 'Rationarium Temporum,' 2 vols. 8vo, 1652, which is a kind of abridgment of his great work, and forms a useful manual of universal chronology. It has gone through many editions, and has also been translated into Latin; and by Dom Perizonius de l'Histoire universelle, sacrée et profane, 2 vols. 12mo, Paris, 1715. Perizonius published an edition of the 'Rationarium Temporum,' with a continuation down to 1715. At this the work of the authors is the list of Roman consuls, the princes of the Roman Church, the emperors of the East and West, and the emperors of the various dynasties of modern Europe, as well as of the council, and of the various heresies and schisms. Petavius wrote also 'De Theologia Dogmatibus,' 3 vols. folio, Antwerp, 1700. It was a continuation of his work on the same subject, but with notes, Paris, 1648; the works of Synesius, bishop of Ptolemais in Cyrenaica; and those of St. Epiphanius, with a Latin translation, 3 vols. folio, Paris, 1622. He also wrote a dissertation upon Plotinus, 'De Photino Herceticus.'
belivers who, in consequence of persecution in Judæa, were obliged to take refuge in distant provinces: and again, since the ministry of the circumference was committed to St. Peter, it is more likely that he should address himself to them in the same manner, than to the Galileans.

Another controversy has been agitated with respect to the place where the Epistle was written. In the concluding verses, it is implied that the Apostle was then at Babylon; but whether the word is used in an emphatic or a metaphorical sense, or as if the common name for the city of which, or mysteriously to signify Jerusalem or Rome, is the matter in debate. In all probability the term is employed for Rome; for the Jews were fond of using figurative apppellations, especially in their national disasters. They had frequently a name for their heathen oppressors, and as Babylon was the cause of their first dispersion and captivity, it is not unlikely that Rome, the instrument of their second, and which so closely resembled Babylon in her abominations, idolatries, and persecutions of the saints, should be denominated by the same title.

As St. Peter arrived in Rome, A.D. 63, and suffered martyrdom about 65, the Epistle may be dated in 64. It was written in a period of general calamity to the Church; and the design of the Apostle was to console and strengthen his converts in their trials, and teach them how to bear persecution. He exhorts them to honour and obey the civil authorities; and, above all things, to lead a holy and blameless life. He warns them of the spiritual danger among heretics and calumniers, and by their example gain over others to the side of Christianity.

The best critics speak highly of the excellence of this Epistle, and pronounce him a writer not of one unit of mind, but of several. Another calls it majestic; and a third declares it one of the finest books in the New Testament, composed in a strain which demonstrates its divine authority. The writer displays a profound knowledge of the Gospel, and a deep conviction of the divinity of its doctrines. Careless about the disposition of his words and the rounding of his periods, his heart is absorbed and his thoughts swell with the importance and grandeur of his subject. His style is robust and free, and speaks with the authority of the first man in the Apostolic college.

His second Epistle was written soon after the first. Its object is to confirm the instructions which he had formerly delivered, to establish his converts in the religion that they had embraced, to caution them against false teachers, and to prepare them for the future judgment of the world.

[End of the Second.] 

PET. ST. MARTYR. [Office, Holy.] 

PETER OF BLOIS, better known by his Latinised name Petrus Blesius (Bois being his birth-place), a writer of the twelfth century, who spent much of his life in England. He was the author of a great number of works, and was known as the archdeacon of Bath. There is a large volume of the writings of this Peter, consisting very much of letters, from which a fair better account of his life might be collected than that which has been preserved. He was in great favour with Richard, who succeeded Becket in the archbishopric of Canterbury, and was his chancellor. He had also in England the archdeaconry of London, having resigned that of Bath. Peter was a scholar of John of Salisbury; and before he came to England he had studied at Paris and Bologna, and had been secretary to William II., king of Sicily. He died in England in 1206. The edition of his works by Pierre de Goussinville, folio, 1656, is the best. Several of them belong to the series known as the Fathers of the Church.

Peter visited Bologna for the purpose of acquiring a knowledge of Roman law, and his letters contain numerous indications of his acquaintance with this subject. A work of his on canon law and process has lately been discovered, of which an account is given in the Zeitschrift für Geschichtliche Rechtswissenschaft, vol. vii., p. 207. (Savigny, Geschichte des Rechts.)

PET. OF SICILY. [Sicily, The Two, Kingdom of.]

PETER THE CRUEL. DON PEDRO I., son of Alfonso XI., after his father's death succeeded to the united crown of Castile and Leon, A.D. 1308, being then only ten years of age. His first step was to put to death Leonora de Guzman, the mistress of his father, who had several children by her. His next proceeding was to command the city of Burgos to pay a certain tax, without the sanction of the Cortes, but the people resisted and killed the collector. Upon this Pedro went to Burgos, accompanied by Don Juan de Albuquerque, his unprincipled councillor, and having summoned Garciasso de la Vega, the adelantado of Portugal, into the city, they proceeded to the house of the tax-collector, and put him to death by his ballistae, or men-at-arms. In 1322, he assembled the Cortes at Valladolid, and endeavoured, but without success, to obtain the abolition of the Beheiras, a tax which was so oppressive as to drive the people to revolt; at last, to whichever towns that had placed themselves under the protection of some powerful noble, and were in great measure independent of the crown. He next proceeded to Ciudad Rodrigo, where he had a conference with his maternal uncle, Alonso de Fonseca, but was not satisfied with the result, and on his return having procured some conciliating measures towards his half-brothers, the sons of Donna Leonora, who possessed great influence in the country. Pedro listened to the adovos, and he even made his brother, the eldest of his natural brothers, Don Enrique, called Enríquez of Transamarre, to his court, where another brother, Don Tello, already was. But his brothers did not trust him, and they soon left Pedro. rebellions were defeated, and emigrated into Aragon. In 1325, by the advice of his ministers, Pedro solicited and obtained the hand of Blanche of Bourbon, a princess of the royal house of France. Pedro, who had a mistress, Maria de Padilla, behaved with coldness to his bride, had an affair with a sister-in-law, and fell into a scandal.

He next conceived a passion for Donna Juana de Castro, a young lady of a noble family, and in order to marry her, he pretended, upon some grounds unknown to us, that his mistress, Maria de Padilla, and his brother, the archbishop of Salamanca and Avila, who took his part. In 1354, he publicly married Juana at Salamanca, but he soon abandoned her also, on the ground that he had deceived her as well as the princess. No song after Juana was brought to bed of a son. Her brother, Fernando, Duke of Castro, a powerful lord of Galicia, incensed at his sister's treatment, raised the standard of revolt, and joined the king's brothers and other discontented nobles. Queen Blanche being rescued from her guards by her brother Philip, she took her champions and defenders. The league thus formed became too powerful for Pedro, and on the interference of the pope's legate, the king promised to discard Maria de Padilla and to live with Blanche. On this condition the papal legate abstained from excommunicating him, but Pedro shortly after, having obtained supplies from the Cortes at Burgos, resumed the war, confined Blanche to the fortress of Siguenza, surprised the towns of Toledo and Toro, and put to death many of the leaders of the perfidious party. The operation continued into Aragon. In 1356, Pedro having got into his possession his natural brother Fadrique, grand-master of the order of St. Iago, ordered him to be put to death by his guards; but Fadrique, having obtained the assistance of his cousin, Don Tello kept up a desultory warfare against Pedro on the borders of Aragon and Castile.

Pedro now entered into an agreement with his cousin, as a reward of his services, to share with him and his brother the possession of the kingdom of Castile. [Alonso IV. or Postregal.] In 1360 the exchange of blood was made. The Castilian gave up the Portuguese emigrants, who were put to death, and he obtained the persons of several of his revolted nobles who had fled to Portugal. The king was speedily despatched, except the archbishop of Toledo, the protector of Blanche, who was only banished. In 1361 that unhappy lady was put to death, it is said by poison, at Xeres, by order of her husband. After, Maria de Padilla died a natural death, and Pedro, having assembled the Cortes at Seville, declared that she had been his lawful wife, and produced witnesses who swore to the nuptials having been performed before his marriage with Blanche. The Cortes acknowledged the issue of Maria de Padilla to be legitimate.

It was about this time that Pedro committed another atrocious murder, on the person of Abo Said, the Moorish governor of Granada, in order to purchase the assurance of his safety. The Moor was put to death in a manner safe conduct, the purpose of doing homage for his kingdom as a scourge of Castile. The Moor came with numerous attendants and servants in splendid attire, and brought much valuable property with him. He was invited by
Pedro to an entertainment, in the midst of which a number of armed men entered the hall, seized the Moors, riled their persons, and dragged them to prison. The following day Abu Said, mounted on an ass, and thirty-seven of his richly clad followers (including the sons of the great lords of Seville), preceded by a herald, who cried that they were condemned to death by King Don Pedro for detaining their lawful sovereign Mohamed Ben Yusuf. Being conducted through the streets of the city, Alphonso of Castile, with a heart full of love to the heart by Pedro himself, whilst his companions were despatched by the Castilian guards. A.D. 1362. Abu Said was a usurper, but Pedro was not his judge. He had come to the palace on the faith of a king's promise, and on a friendly errand, and his murder was as unprovoked as it was cowardly.

[Moors, p. 389.]

The king of Aragon, joined by the king of Navarre, as well as by Bertrand Duguesclin and other French leaders and soldiers who presented the cruel treatment of Blanche, invaded Castile in 1366, entered Calahorra, and proclaimed Enrique, Pedro's natural brother, as king. Pedro, who was at Burgos, fled to Seville without fighting. Enrique was acknowledged throughout all Castile, and the people of Seville soon after revolted against Pedro, who fled into Portugal.

From Portugal he went into Galicia, where he had some partisans, who urged him to try the fortune of arms; but after having already, in 1363, formed an alliance with Edward III, who had depended chiefly on the assistance of the Black Prince, who was then in Gascony. While passing through St. Iago he committed another deed of striecy, the motive of which is not clearly ascertainable. The Black Prince had been assigned special charge of several towns and fortresses, and he was one of those who had urged Pedro to make a stand against his enemies. All at once Pedro sent for him, and on the archbishop reaching the gate of his own cathedral, where the king stood as if to receive him, he and the dean were suddenly pierced by the spears of the guards, and the church was plundered. The strongholds of the archbishop were then occupied by the king's troops, after which Pedro embarked at Corunna, and sailed for the Cape Verde.

Edward the Black Prince engaged to restore Pedro to his throne. Pedro on his part promised him the lordship of Biscay, with a supply of money for himself and his army. Besides the alliance existing between his father and Pedro, the French king, Charles V., being the ally of Enrique, the English prince found it his interest to put his weight in the other side of the scale. In the spring of 1367 the Black Prince, together with Pedro, put themselves in motion with an army of English, Normans, and Gascons, and passing through the defile of Roncesvales, they crossed Navarre, with the consent of that king, and entered Castile. The Black Prince was joined on his march by Sir Hugh de Calvadox, whom he had brought with him; as well as of several thousand men, who had served as volunteers in the army of Enrique, but would not bear arms against their own countrymen. The army thus reinforced amounted to about 30,000 men, which, though forming good numbers, but the men were not all true to his cause. The two armies met at Naja, a few miles from the right bank of the Ebro, on the 3rd of April. The battle began with the war cry of 'Guinée and St. George' on one side, and Castile and St. Iago on the other. Enrique fought bravely, but his brother Don Tello fled from the field at the head of the cavalry, and the Castilian infantry, being charged by the Black Prince in person, gave way. Enrique escaped with every favourable chance; his fate was not lamented, for insubordination had not been tamad by adversity, wished to kill the prisoners, but was prevented by the Black Prince as long as he remained in Castile. Pedro proceeded to Burgos, and all Castile acknowledged him again. But he behaved faithlessly to his ally; he only paid part of the money which he had promised for the troops, and as for the lordship of Biscay, Pedro excused himself by saying that he could not bestow a better office on any of the nobles of the province. The Black Prince, disgusted, and out of health, with his troops half starved, returned to Guinée, where he arrived in July. After his departure Pedro gave vent to his cruelty, and put to death many persons at Toledo, Cordoba, and Seville. When the Black Prince, who had left Enrique having again made his appearance, many of the towns of Castile declared for him. Some towns however, and Toledo among the rest, held out for Don Pedro, and a desultory but destructive warfare, as all Spanish wars have been, was carried on for two years. The circumstance of Pedro having still a strong party in many towns, notwithstanding all his cruelty, gives weight to the supposition that while Pedro ruined the nobles with an iron sceptre, he was not yet so obnoxious to the people, who would not out of the reach of his capricious ferocity. Indeed it is said by Roderic Santius, that he was the scourge of the proud and turbulent, that he cleared the roads of robbers, and that he could not be regarded as a bad general in war. The Black Prince, naturally, was disgusted at this state of things, and had decided on a new expedition, when suddenly, in March, A.D. 1366, Enrique, being joined by Duguesclin with 600 lances from France, laid siege to the town of Montiel, where his brother then was. Pedro, through one of his knights, who had made a great offers to Duguesclin if he would assist him to escape, Duguesclin consented to his offers, and it was agreed that he should entice Pedro to his tent. On the evening of the 23rd of March, Pedro came to Duguesclin's tent, when Enrique, who lay in wait, fell upon him with his dagger. They grappled together and fell to the ground, but Enrique soon despatched his brother. A Catalonian, quoted by Zurita, says that Enrique's attendants assisted him in overpowering Pedro. Bad as the latter was, there is no excuse for the massacre and foul murder in which he was killed. Enrique II. was then proclaimed throughout Castile.

(Dunham, History of Spain and Portugal, and authorities thereon contained in Cassar, Chronicles, &c.)

**PETER THE FIRST**

**THE GREAT.** Czar of Russia, was born at Moscow, on the 11th of June, 1672. His father, Alexis Michaelovitza was twice married: by his first wife he had two sons and four daughters; and one son (Alexis) and one daughter (Alexzona) by his second wife. The Czar Alexis was a man of a liberal mind: he commenced the work of improvement among his barbarous subjects, established manufactures, reduced the laws into order, restored the usurpation of the clergy, and invited foreign officers to discipline his armies. He died in 1677, and was succeeded by his eldest son Theodore, a youth of delicate constitution, who died in 1682, leaving no issue. The next brother, Ivan, was subject to epileptic fits, and in so parlous a state that Peter was named Peter as his successor. The princess Sophia, an ambitious woman, who had intended to reign herself, through the medium of her incompetent brother, was enraged at this appointment, engaged the strength on her side, and fomented an insurrection, which was only appeased by Ivan being proclaimed joint sovereign with Peter, and Sophia as regent. Peter narrowly escaped with his life on this occasion, for, having fled with his mother to the Troitski convent near Moscow, at the commencement of the insurrection, he was pursued by some of the stretelles, who found him before the altar, and were only deterred from striking a fatal blow by feelings of reverence or superstition. When Peter was seventeen, his mother died, and was succeeded by the boyar Fedor Abrahamavitz, during the absence of Prince Galitzin, who had been associated by the Princess Sophia with her in the government. On the return of the princess Galitzin, the plans were entirely deranged by this event, raised an insurrection, which however was soon suppressed, and Galitzin was banished to Arelange, and forfeited his estates. The Princess Sophia was confined to a convent for the rest of her life, which terminated in 1704.

From this time (1683) Peter reigned supreme; his brother Ivan never interfered, and died in 1686. Peter was now in the eighteenth year of his age. He was tall, stout, and well made; his body was very stately, and had a great degree of severity; at other times he was lively and sociable, and always full of energy and activity. His education had been much neglected, and it is said that the Princess Sophia had encouraged every species of excess by placing about him corrupt companions. Although there is no doubt that much of his time was passed in debauchery, yet it is a strong proof that a portion of it must have been devoted to some other employment, for in 1687 he undertook a system of reforming the whole system of government and the manners of the people, in which he had to encounter the jealousies of every class of his subjects, who looked upon these changes as subversive of their antient constitution. His first step was the publication of a new code. He first directed his attention to the army, in which department his plans were ably seconded by Generals Le Fort and Patrick Gordon, who, with other foreigners, had entered into his service. He himself entered the army as
a private soldier, and rose through all the intermediate ranks before he obtained a commission. He caused all the young boys to follow this example. He made the soldiers learn, and in a very short time he had a corps of 3000 men disciplined and trained on the German plan. The sight of a small vessel built by some Dutchmen in his port, the River Neva, which was long thought in Moscow, made a great impression on him, and he determined to have a navy. He hired Dutch and Venetian shipwrights, who built some small vessels at Pskov, in which he went on Lake Pskov, until he became too confined a space for him, he went to Archangel, where he passed two summers cruising on board English and Dutch ships, and learning the duties of a practical seaman. His taste for everything connected with ships and navigation, which he resolved never to be longer dependent on foreigners for his ships, and accordingly sent a number of young Russians to Venice, Leghorn, and Holland, to learn the art of ship-building. By these measures his expenditure had been so much increased that it was necessary to take some steps towards augmenting the revenue, which he did, through the advice of his foreign councillors, by raising the custom-house duties on tobacco and sugar, which increased the revenue of 2,000,000 rubles in the first year. In 1696, he besieged and took Azoff. During the rejoicings which followed this first victory by the army and navy of his own creation, some of the discontented boys and small officers conspired to put him to death, and it was resolved that some Russian ships, and ships of other nations, which formerly subjected them to the penalty of death, and he altered the calendar, much to the horror of the priests, ordering that the year 1700 should commence on the 1st of January, instead of the 1st of Sep- tember, which was the old Russian calendar. He also instituted the order of St. Andrew, the patron saint of Russia.

In the year 1700 Peter entered into an offensive league with Poland and Denmark against Sweden. His armies were defeated before Narva by Charles XII., on the 19th of No- vember in that year; but far from being dispirited at this event, he was only excited to renewed exertion, and he ob- served that the Swedes would henceforth be unable to resist him. In 1703 he laid the foundation of St. Peters- burg; and in the previous year the Russian army, under Scherematsoff, had gained a complete victory over an inferior force of Swedes, and immediately after took the town of Marienburg. The war continued with more or less success until the year 1709, when Charles XII., having rashly marched into the Ukraine, was completely defeated by the Russian army under Peter at Pultowa, on the 15th of June. Charles himself escaped to Bender, but his army was totally annihilated.

We have seen that Peter, in his seventeenth year, had a wife forced upon him, who bore him one son, Alexis. The marriage was not a happy one. Peter, not satisfied with all innovation, Peter found it necessary to divorce and con- fine her to a convent before he had been married three years (1696). His son Alexis was unfortunately lost in her guar- dustress, who was afterwards publicly. On the 17th of March, 1711, he declared the czarina Catherine to be his lawful wife. She accompanied him to Warsaw, and immediately afterwards to the war in Turkey, which had just broken out. Peter, following the rash example of Charles XII., entered the enemy's country before his whole army was concentrated. Without sufficient force to keep up his line of communication with Russia, he crossed the river Pruth near Jassy, marched some way down the right bank, and was hemmed in by the army of the grand-vizier on one side, and the Tartars of the Crimea on the opposite shore of the river. Afterwards, as the Russian army became desperate, when Catherine, unknown to her husband, sent a letter to the grand-vizier, with a present of all the plate and jewels she could collect in the camp. After some delay, the letter of peace was signed, by which Peter agreed to the demands of Azoff and Tepick, and then applied the Russian army with provisions. Peter's health was...
so much impaired after this campaign, that he went to Carlsbad to drink the waters. From Carlsbad he proceeded to Dresden, where his son the czarovich Alexei Petrovitz was married to the princess of Wolfenbuttel. From Dresden he went to St. Petersburg, where he solemnized his marriage with a great rejoicing. Peter now determined to strip Sweden of every place which could be an annoyance to his new capital. Before the close of 1713 Stralsund was the only spot in Pomorania remaining to the Swedes. Peter himself took the place or its raas, and then, leaving Menzilloff to carry it out, went to St. Petersburg, and from thence with a squadron of galleys and flat boats made himself master of Abo and the whole coast of Finland. The library of Amsterdam and St. Petersburg, and the whole collection of the present library of that city.

He next defeated the Swedish fleet in a naval engagement, and instituted the female order of St. Catherine on the occasion, in memory of the czarina, who alone could bestow it. The senate was removed from Moscow to St. Petersburg in 1713, and the emperor's summer and winter palaces were completed in 1715. He employed about 40,000 men in finishing his dockyard, building ships, wharfs, and fortifications. 'Goods imported into Archangel were prohibited from being sent to Moscow; and under these favourable circumstances, St. Petersburg soon became a place of great importance.'

Peter had now taken the whole of Finland, and the provinces of Estonia and Livonia, and having nothing to fear from Charles XII., he made a second tour through Europe in 1716, accompanied by the empress. They visited England, France, and Holland, and also the grand-ducal state of Tuscany, and the provinces of Mecklenburg, Mecklenburg, and Stockh, and Copenhagen, where he remained some months. While he was at Copenhagen, an English and a Dutch squadron arrived: Peter proposed that the four fleets should unite, and proceed to sea in search of the Swedish fleet; the chief command was given to the Czar, who declared the moment in which he hoisted his standard to be the proudest of his life. From Copenhagen he went to Liebeck, where he had a parley with the king of Prussia, and then to Amsterdam, where he remained some time. Catherine, who had been left behind, was brought to bed at Wesel of a third child, which died the next day. She remained at Amsterdam while her husband went to Paris, where he was received with great splendour. On his return to Amster-
dam he visited Berlin on his way to Russia. During this tour he purchased great quantities of pictures, cabinets of birds and insects, books, and whatever appeared likely to excite his sonorous were bought. The king and queen of Denmark presented him with a great hollow globe eleven feet in diameter, whose inside represented the celestial and the outside the terrestrial sphere. Peter showed everyone the globe and the books which he had always envied, and avoided them when possible.

His eldest son, Alexias, who had unhappily been left to the guardianship of his mother, had always been a source of disgust and trouble to Peter; and when he grew up, far from showing any desire to tread in the footsteps of his father, he chose his friends and advisers from among the disaffected and turbulent boyars and priests, who were opposed to all change. The unfortunate princess, wife of Alexias, had fallen a victim to the brutal conduct of her hus-
band, after giving birth to a son, Peter Alexiovitch, afterwards Peter II. While yet grieving for the loss of his daughter-in-law, Peter remarried with his son on his conduct, and took to his wife, the widow of his late brother, whom he had altered in the course of living. These remarriages being treated with complete neglect by Alexias, who still pursued his vicious courses, Peter forced him, on the 14th Feb., 1718, to sign and swear to a deel wholly renouncing the succession to the crown: he also required from him the names of his advisers in his misconduct. The answers given by Alexias to the queries put to him were such, that Peter thought it necessary to try him by the great officers of the court. The trial terminated in an execution of the great wealth of Alexias by the king, who, by his orders, condemned him to death. On the day of his condemnation, he was seized with a violent illness, which terminated in two days, on the 7th July, 1718. His mother was strictly confined, and his advisers punished. In consequence of this, by Catherine, in whose favour Alexias had abated, died at five years of age. On the 10th September, 1721, the peace of Neustadt was concluded, by which Sweden ceded to

Russia, Livonia, Esthonia, Ingria, Curelia, Vyborg, and the
adjacent islands, but secured the possession of the Gulf of
Finland.

Peter had now attained the summit of his glory: he was requested, and after some hesitation consented, to adopt the titles of 'Peter the Great, Emperor of all the Russians, and Father of his Country.' The 7th November, 1721, was the date of his coronation. Peter had now turned his undivided attention to the arts of peace. He commenced canals to unite navigable rivers; encouraged by bounties the manufac-tures of cotton and linen cloths; the erection of corn, powder, and sawing mills; established a manufactory of small-arms; instituted hospitals, and established a uniformity of weights and measures; paved the streets oflieand and on the Festivals and great occasions sent his wife, the Great dowager, to pay visits to foreign courts and countries, in order to acquire more civilised manners. Some of his mea-sures were not so politic, although equally well intended, such as the attempt to fix the prices of provisions and the limit of expense in dress.

In 1722, Peter led an expedition to the Caspian, which however failed in producing any results. In 1723 he went to St. Petersburg to found the Academy of Sciences, and to erect a memorial of the establishment of a navy in Russia. Peter took his idea of the academy from that of Paris, of which he had been a member during his visit to that capital. In the same year he caused Catherine to be crowned, and he was also crowned king of Holstein Gotterp. He suffered greatly at this time from a strangury in the neck of his bladder, which painful dis-order he endeavoured to stifle by an unlimited indulgence in strong liquors, which so much increased the violence of the disorder, that he finally could not tolerate them in his presence. Being partially relieved, he went, in October, 1724, contrary to the advice of his physicians, to inspect the works on Lake Ladoga. On his return he proceeded to Luchka, on the Gulf of Finland, and had scarcely anchored there, when a boat full of soldiers being cast on the shore, Peter, in his ardour to assist them, waded through the water, which brought on violent inflammation in the bladder and intestines. The disease rapidly increased, and his complaint made rapid progress, giving him intense and constant pain. He at length sunk under the disease, and expired on the 28th of January, 1725. His body lay in state till the 21st March, when his obsequies and those of his third daughter, Natalia Petrovna, who died after her father, were performed at the same time.

Peter I, deservedly named the Great, was compounded of contradictions; the greatest undertakings and the most arbitrary measures. Richness and luxury, the freedom and the luxury, the freedom and the narrowest economy; all this was as conspicuous in him as a total disregard of human life; he was at once kind-hearted and severe even to ferocity; without education himself, he promoted arts, science, and literature. He was as generous to his friends as he was to his people, and was himself a savage; he taught them the art of war, of which he was himself ignorant; from the sight of a small boat on the river Moskva he created a powerful fleet, made himself an expert and active shipwright, sailor, pilot, and commander; he changed the manners, customs, and laws of the Russians, and lives in their memory as the Father of his Country.

Menzilloff, whose birth was so obscure as to be totally unknown, and who had risen through the favour of the Czar to be a prince and governor of St. Petersburg, caused Catherine to be proclaimed empress immediately after the death of Peter, and during her reign she passed from being an unimportant person to one of the greatest empresses of the world, and she accomplished the destruction of her brother, the heir apparent, who was henceforward called the young Czar. Peter felt the greatest repugnance to her, and in consequence, with the help of Dolgorouki, his tutor, caused Menzilloff to be arrested and banished to Siberia. In this latter situation, the king, Menzilloff, having cut out of it 10 rubles a-day for his support. He died at Berezov, in 1729. The Haughty favourite of Peter the Great, whose magnificence exceeded that of crowned heads, died in poverty and exile.

Among other works connected with the mechanical arts, Peter the Great translated 'L'Architecture de Sebastien Leclerc'; 'L'Art de Tourner, par Plumer,' 'L'Art des Ecleses et des Moulins, par Sturm.' The manuscripts of vol. xviii.—e
that, with this journal of the Swedish campaigns from 1698 to 1714, are preserved at St. Peter's.

VOL. II. [RUSSIA.]

PETR II. [RUSSIA.]

PETR III. [RUSSIA; CATHERINA II.]

PETR HOUSE. [Crusaders.]

PETR-HOUSE, the earliest endowed college in the university of Cambridge, was founded in 1257, by Hugh de Balsham, then sub-prior, afterwards bishop of Ely, who, having presented, one of them belonging to the Friars of Penance, united them, and appropriated the building for the residence of students: but it was not till 1260, after his promotion to the see of Ely, that he endowed the college with revenues for the support of the chaplain, four fellows, and eight scholars. After his death a new college was built on the site of the two hostels, for which purpose the bishop gave by will the sum of three hundred marks; he gave them also the church of St. Peter. Among the principal benefactors in subsequent times were Simon Langhurn, bishop of Ely, who gave the rectory of Cherry-Hinton; bishop Montacute, who appropriated the church of Triplew, and gave the manor of Cawwell in Huntingdonshire to the abbey; one of the two colleges and two scholarships, and gave two advowsons; and Dr. Hales, one of the masters, who gave the sum of 700l. and two recitories.

The fellowships are open without restriction to natives of any part of the British dominions, but no one is eligible who is M.A., or of sufficient standing to take that degree. The bishop of Ely appoints to the mastership one of two candidates presented to him by the society. The candidates must be divines of known divinity, and must be selected if possible from the fellows on the foundation. Formerly there could not be more than two fellows of a county (except of Cambridge or Middlesex), and seven fellowships were confined to the northern and seven to the southern division of England and Wales; but these restrictions were removed by letters-patent, which came into operation in June, 1839.

One-fourth part only of the foundation fellowships are required to be in priest's orders. By queen Elizabeth's licence, the five senior clerical fellows may hold abbey tithes with their fellowships, provided they are not more than 20l. in the Liber Regis, and within twenty miles of the university of Cambridge. The bye fellowships, which are perfectly open and unrestricted, are distinct from the former; the possessors of them are not entitled to any office or voice in the affairs of the college. Two were founded 1589, by Andrew Perne, D.D.; two, in 1601, by Lady Ramsay; and four in St. Peter's Park, Ely.

Two fellowships of 70l. per annum each, and four new fellowships of 30l. per annum each, have recently been added to the college from the donation of the Rev. Francis Giborne, M.A., late fellow of Peter-House. This foundation benefits four clerics of divinity, and must be selected if possible from the fellows on the foundation. Formerly there could not be more than two fellows of a county (except of Cambridge or Middlesex), and seven fellowships were confined to the northern and seven to the southern division of England and Wales; but these restrictions were removed by letters-patent, which came into operation in June, 1839.

The rest of the scholarships, fifty-eight in number, of different value, are paid in proportion to residence. A few of them are in the patronage of Lord Melbourne, and preference is given to scholars of Hertford school.

The living in the gift of this college are, the rectories of Glaston in Rutlandshire, Staterne in Leicestershire, Exford in Somersetshire; Norton, Wincnes, Newton, and Freckenham, in Suffolk; and Knappost in Norfolk; with the vicarage of Hinton, and the curacy of Little St. Mary, Cambridge, in Cambridgeshire; and the vicarage of Ellington in Huntingdonshire. Glaston rectory is annexed to the college, and the vicarage of Hinton is annexed to the curacy of Little St. Mary are tenable with fellowships.

This college stands on the west side of Trumpington-street, and consists of two courts, the larger of which is 144 feet by 64. The chapel, which stands in the lesser court, was formerly the market place, and was built building on the opposite side of Trumpington-street.

The bishop of Ely is the visitor of this college. The number of members upon the boards, March 18th, 1840, was 216. Copies of the statutes of this college are preserved among the Harleian MSS. in the British Museum.
appearance, without that overwhelming heaviness which appears in many other great circular piers in Europe. At the western end of the nave are three chapels, or transepts: over the north-western transept is a tower of early English character, with angular buttresses surmounted with pinnacles, and formerly with a spire. It was obviously part of the original church, but its present form is due to the subsequent addition of the south-western transept, but it was never completed. The fine western front of the cathedral is an addition to the nave; it consists of a lofty portico of three compartments, that in the centre of which is a triple arch, and this has an equal height in the nave, supported by triangular piers faced with clustered shafts, and is surmounted by a lofty and richly ornamented pediment and a cornice. At each extremity of the western front is a lofty turret flanked at the angles by clustered piers crowned with pinnacles and spires. The fine effect of this western front is much injured by a small porch or chapel inserted in the central arch between the piers, which, though in itself very beautiful, is here quite misplaced.

Though the general character of the architecture is Norman or early English, great alterations have been made in later styles. Nearly all the windows have had traceried intrac- tion and veils or human arms have been enlarged. The peripheral addition at the western end, on the south side of the choir, which have been carried out square, is plain in its outward appearance, with large windows and bold buttresses, the latter surmounted by statues or places of pinacles. In the north-western angle of the choir two great transepts is painted wood; and the choir, has a wooden groined roof of very inferior workmanship and appearance. The dean and chapter have recently erected a new organ-case of four windows, the great organ with the Choir stalls, throne, pulpit, and altar-screen. The organ-screen consists of an entrance into the choir under a richly moulded pointed arch surmounted by a crocketed canopy. The whole of the fitting up of the choir is in the style of the time of Edward VI., and all the choir is ornamented with a richly ornamented. There are few monuments, shrines, or chantry chapels, the devastation of the parliamentary troops having deprived the church of many of its ornaments of this class. The burial-place of Arworth and Mary of Scotland, both of whom were interred here, are unmarked by any sepulchral monument.

The dimensions of the church are given by Bridges (Hist. of Northamptonshire) as follows:—length 476 ft. 5 in., breadth of the nave and aisles 78 ft., height of the ceiling of the church 78 ft. breadth of the church at the great transepts 203 ft., breadth of the transepts 69 ft., height of lantern 135 ft.; all these are (we believe) inside measurements. Length of the cathedral is 621 ft. 2 in., width 222 ft. 10 in., the breadth of the west front 156 ft., tower and spire (the latter since taken down) over the north-west transept from the ground, 164 ft.; height of the central tower from the ground 131 ft. 9 in., and of the spire 226 ft. in height.

The view of the cathedral is confined on every side except the west, at which end is a large tower, the entry to which from the town is by a gateway of Norman architecture, with some later additions. On the south side of the court is a range of the ancient monastic buildings, retaining much of their ancient appearance, and having in the midst of them the tower-gateway to the bishop's palace, over which is the knave's chamber. On the greater part of the other sides there are the bodies or houses of the canons, or the buildings of the citizens, which is filled with tomstones. The gate of entrance to this cemetery from the western court is by a late perpendicular gate, remarkably rich in ornament. This cemetery is now not used; and a new burial-ground has been formed on the western side of the city.

The trade carried on at Peterborough is chiefly in corn, coal, timber, lime, bricks, and stone. The Nene is navigable for boats. There is a weekly market, and there are two twice a week and a fair every Saturday, over the bridge on the Huntingdonshire side of the river.

There is no corporation at Peterborough. The dean and chapter exercise a certain jurisdiction; their steward holds a court of record. There used to be an action, personal or mixed, arising within the city, but suits above 5s. are seldom tried here. The writs issuing from this court are directed to the bailiff of the city, who is appointed by the dean and chapter. Questions for the liberty of the city which includes the whole soke or hundred of Peterborough are held for trying criminal actions of all kinds; the Custos Rotulorum, who is appointed by the crown, presides. The gaol house is a large building for the city and liberty and both miserably deficient. (First Report of Inquiry into Prisons in Great Britain.) Prisons committed for trial for capital offences are sent to Northampton.

Peterborough has sent members to parliament from 1 Edw. VI. (1547) to 1624. The parliamentary purpose was enlarged by the Boundary Act, so as to comprehend the whole parish of St. John the Baptist and the Minster precincts, which are extra-parochial. The bailiff of the city is the chief officer. The number of votes registered in 1832-36 was 578.

The living of St. John is a vicarage including the chapelry of Longthorpe, of the clear yearly value of 575l., with a glebe-house. It is in the gift of the bishop of Peterborough. There were in the parish, in 1833, one infant-school, with 68 children; the endowed cathedral grammar-school, with 31 boys; two endowed schools, with 20 and 16 boys respectively; a national school, with 322 boys and 118 girls thirteen other boarding or day schools, with 182 boys and 190 girls; and two Sunday-schools, with 93 boys and 91 girls.

The bishopric of Peterborough was erected by Henry VIII.; the diocese, which was taken out of that of Lincoln, comprehends the counties of Northampton and Rutland, except three parishes in each county, which remain in the peculiar jurisdiction of Lincoln. There are two archdeaconcies. Northampton; and Peterborough. The archdeacon of Northampton comprehends the ten rural deaneries of Brackley, Daventry, Haddon, Higham FERRERS, Northampton, Oundle, Peterborough, Proston, Rothwell, and Weldon, all in Northamptonshire; and five rural deaneries of the chapter, and the diocesan. One for the soke, Rutland or Martinesley, and Wrindake, all in Rutlandshire; the archdeaconry of Leicester (lately in the diocese of Lincoln) contains the seven rural deaneries of Akeley, Fringland, Gartree, Goodlaxton, Gosost, Leicester, and Sparkenhoe.

The average yearly revenue of the bishopric is returned at £3518l. gross, and 3103l. nett, including the precenters annexed to the see. The average yearly revenue of the cathedral is returned at £6357l., gross, and 518l. nett. The corporation consists of the dean and six prebendaries; there are four minor canons, and a precentor, who is also sacrist and librarian. The dignitaries have no separate revenues.

PETERBOROUGH, LORD. [Mordaunt.] PETERS, BONAVVENTURA, one of the most eminent marine painters of the Low Countries, was born at Antwerp in 1614. The subjects which he in general preferred were storms at sea, 'in which,' says Pictingius, 'he represented with an extraordinary truth what had been witnessed by him. He placed the waves, the impending tempest, vessels foundering or dashed in pieces against rocks, the mariners perishing in the deep, or being seemingly to death. Among these things he expressed with his pencil with the utmost truth, nature, and probability.' Sometimes however he painted calm and views of castles, or towns on the sea-shore, with equal merit. There is the same light and spirited touch, the same appearance in his colouring, and his water, whether agitated or still, has equal truth and delicacy. The figures are extremely well designed and exquisitely finished. In a few of his works (which perhaps are erroneously ascribed to him) the colouring is too coarse, and the draperies of the figures mingled with tints that do not harmonise with the whole. His best works are extremely valuable and scarce, for he died, in 1652, at the early age of thirty-eight years.

PARRIS, JOHN, brother of Bonaventura, was also at Ant- werp, in 1625. He painted the same subjects as his brother, which are as finely touched, as well coloured, as transpa- rent, and enriched with excellent figures. His sea-fights were much admired; so was the painted views of villages, towns, and fortresses on the banks of rivers, which he designed after nature.

PETERSBURG, ST., a government of European Russia, extends from 55° 56' to 60° 35' N. lat. and from 30° 1' to 33° 59' E. long. It is a part of the province of Ingermanland, or Ingria, a part of Carolina, and some circles formerly belonging to Norogordo. It is bounded on the north by the Gulf of Finland, Finland, and Lake Ladoga; on the south by the Poltaw, and the coast of the south by Pakow; and on the west by Lake Peipus and Estonia. 

E 2
The country is for the most part level, and in the north-east part it is but little elevated; the southern part is rather more elevated; a long range, called the Dederow mountains, which in fact are only low hills, nowhere rising more than 200 or 300 feet above the level of the sea, covers the coast for many miles. The額 north and south it is bounded by the Ladoga, Peipus, and Pakow: and the chief rivers are the Neva, the Luga, the Narova, and the Wobesow. The Neva issues from Lake Ladoga, near the fortress of Schlusselburg, and joins the Neva at St PETERSBURG; it is 40 miles long, and about 40 yards wide. The Neva is divided into several branches. The climate is moderate and agreeable. The summer is short, but in general fine and often very hot: thunder-storms are not frequent or violent. The area of the government, according to Schuberti, who is followed by all modern writers, is 77,040 square miles. Arsenioff makes it 16,400, Koppen 16,500, and Hörschelmann 18,600. It is divided into nine circuits. The population, in 1838, was 980,000. Though the climate is so unfavorable, the chief source of wealth, for the forests, though much injured by waste and bad management, are still of immense extent. In the forests vast quantities of berries, wild fruits, and mushrooms are found. There is no game except hare. The country-people rear great numbers of geese, ducks, and turkeys for the markets of St Petersburg. Fish are tolerably abundant. The breeding of cattle is very limited on account of the cold. The mineral kingdom abounds granite, limestone, marl, brick earth, potters' clay, &c. The viticulture is almost wholly confined to the capital: there are however considerable manufactories of cloth, woollen, and blankets, as well as several glass-houses at Janowski and Yelagino. The trade of painting and calico at Schlusselburg, on an island where the Neva issues from Lake Ladoga. Gatschina, situated on a beautiful lake formed by the Ischorna, has 7000 inhabitants, a military orphan-house, and a foundling hospital. [NEVA; CRONSTADT.]

PETERSBURG, ST. the second capital of the Russian empire (Moscow being accounted the first), is situated in 59° 36' N. lat. and 30° 19' E. long., at the eastern extremity of the Gulf of Finland, and at the mouth of the river Neva. Of all the capital cities of Europe, St Petersburg, has at first sight the most striking appearance: the breadth and cleanliness of the streets, the elegance of the buildings, the noble canals which traverse the city, and the regularity of the edifices on their banks, make altogether a most impressive spectacle. 'The united magnificence of all the cities of Europe,' says Dr. E. Clarke (since whose time it has been very much improved), 'could not equal St Petersburg.' There is nothing little or mean to offend the eye; all is grand, extensive, large, and open; the streets seem to consist entirely of palaces; the edifices are lofty and elegant. The public structures, quays, piers, ramparts, &c. are all handsomer than those of any city. This fame, attached to it, and the admiration is increased when we reflect that not a century and a half has elapsed since its foundation. In 1703 Peter the Great chose this spot, then just taken from the Swedes, for the capital. He visited the island, covered in summer with mud, and in winter a frozen pool. The adjacent country was covered with marshes and impenetrable forests, the haunts of bears and wolves. We cannot suppose that Peter had any idea of fixing the seat of his empire on this barren spot, yet it was a strong point, and have a strong position as a check upon the Swedes: this was also the only place through which an intercourse could be established with civilised Europe, an object which he considered very important. So the island was enclosed with a fort which the Swedes had built about five miles from the mouth of the Neva, at the place where it receives the little river Ochta, and which they called Nyenschanz, besides its importance as a fortress, and as the key of the country, was not less important as a military post, during the connection of Novgorod with the Hanseatic league, especially in the sixteenth century. Under Alexis Michaelisitsch the town and the country was almost wholly destroyed by fire, and in 1709 the city was only begun, but an insignificant town when Peter the Great made himself master of it in 1702, after a few days' siege. The habitations supplied materials for the houses of St. Petersburg.

The Neva, on the banks and islands of which the city is built, runs first towards the north, and then turning to the west, sends out towards the north an arm called the Nevka, which again divides into two branches called the Great and the Little Nevka. The main river, after throwing out the arms, divides the town into two parts, and runs north-west, and the Great Neva, which runs south-west. Thus the Gulf of Cronstadt receives the Neva by four great arms, which form several islands. The island to the north of the Nevka is called the Little Neva, and the north side of the river between the Neva and the Little Neva; and on a small island in the Great Neva, between these two arms, Peter laid the foundations of a fortress, which however was not completed till 1715, when the worsts to be overcome were immense. In the spring of 1703 he collected a number of Russian, Tartar, Cossack, Calmuck, Finnish, and other peasants, and workmen were sent from all parts of the empire. Peace not being yet concluded, soldiers were encamped on both sides of the Neva. The great difficulty was to find subsistence for so many persons. The surrounding country was desolated by a long war, and provisions were very scarce and dear. The workmen, being exposed to the cold and the damp, often up to their shoulders in the water, perished from fatigue and want, and the foundation of St. Petersburg cost the lives of one hundred thousand men.

The city, in its present state, is of a circular form, but rather irregular. The circuit is about eighteen miles, but the smaller portion of the area is covered with buildings. The most considerable and the handsomest portion is the southern, on the left bank of the Neva, including the four principal streets, called the White, the Gilded, the Admiralty, and the Great. The capital of the bank of the Great Nevka, lies from south to north, 1, Wlassily-Ostro; 2, St Peter's Island, the Island of Petrovsky, and the Apothecaries' Island; 3, Kammeni-Ostrov, Krestovsky, Island; 4, Ostrov Narvsky, and 5, Ostrov Yelagino. The whole of the island part is divided into public gardens, avenues of trees, and country-houses, which in summer are the resort of the rich. The city is divided into twelve districts, and these again into quarters. Few cities have such long and broad streets as St. Petersburg. They are from 60 to 120 feet broad; and the Nevsky Perspective is 14,350 feet long, the Great Perspective 10,230, and eight others 6000. The stonework is in general bad, and must be laid down afresh every year; a pavement of hexagonal blocks of wood, covered with tar, has been found to be more durable and cheaper, and is now used in many of the principal streets, which have broad flag-pavement for the foot passengers. There are no wells, but the water of the Neva is remarkably pure, clear, and wholesome. Those who live at a distance from the river use the water of the canals, the principal of which are the Fontanka, surrounding the whole Admiralty quarter, and, within it, the Catherine Canal and the Moika. There are two bridges of boats over the Neva, and three over its arms; one of them, the Trotstoi or Suwaroff Bridge, is 2456 feet long. These bridges are all removed whenever danger is apprehended from the ice, both at the beginning of the winter and in the spring. There are four lines of skillful workmen, of whom one is alluvial clay, which are of granite, and ten of cast-iron, two of which are handsome suspension bridges, and many of wood. The Great or Southern Neva is here from 900 to 1200 feet wide, and its southern and northern banks are separated by a low mound, which is called the Great Earth. In the north-eastern part, close to the White Sea, is the Port of Saint Petersburg; the limits of which are inclusive of the Admiralty, which divides it into two parts, is furnished with a quay of granite, a work which, for utility
and magnificence will remain a lasting monument of the reign of Catherine II. The bank is raised on piles ten feet above the ground. Most every edifice has at least one foot broad, a breawork two feet and a half high, and, at convenient distances, double flights of steps for landing, with semicircular seats at the top, all of granite. The part of the quay nearest the palace is the Court, and that on the west "The English Quay," being lined with a row of houses chiefly inhabited by opulent English merchants. The Quay of Wasilliy-Ostrov, on the opposite bank, which was completed in 1834, is still finer, but not so extensive. The gardens and ornamental colonnades or sphinxes, brought from Egypt, are which are placed in front of the Academy of Arts. There are 140 Russian-Greek churches, 40 of other Christian communities, 2 Greek convents, and 18 Roman Catholic institutions. The faculties are here formed in fifteen languages. Of the Greek churches the most remarkable are, 1, the Isaac's Church, which when finished will be the most magnificent—it is to be built entirely of marble; 2, the beautiful cathedral of the Mother of God of Casan; 3, the church of St. Nicholas; 4, the church of Alexander Nevsky, in the convent of the same name, containing the body of the saint in a silver sarcophagus (the convent is the residence of the archbishop of Peters- burg), which contains an academy and a seminary, with a fine library; 5, the church of St. Peter and St. Paul, in the citadel, which contains the tombs of the imperial family. The number of magnificent palaces and public buildings in Petersburg is the 22nd of June. The buildings which have been enumerated the most remarkable is: 1, The Imperial Winter Palace has been described as the most conspicuous by all travellers: it was entirely destroyed by fire, about three years ago, but has been rebuilt. It is the great his- tory of the imperial guard, the fire was prevented from extending to the Hermitage, built by Catherine, which contains a costly library, a valuable collection of paintings, and other treasures. 2, The Marly Palace, an elegant but gloomy-looking building. 3, The Winter Palace, with its fine gardens, presented to Prince Potemkin by Catherine II. 4, The Anichkov Palace, the residence of the emperor Nicholas while he was grand-duke. 5, The Old Michaelov Palace, where the empire Paul resided and died. 6, The New Michaelov Palace, with a park, the residence of the grand-duke Michael. It was built between the years 1819 and 1825, and is one of the finest palaces in Europe. The number of what are called eathen-buildings is very great. Among them are, 1, the Admiralty, surrounded on three sides by the dock-yards; 2, the splendid building belonging to the general staff; 3, in the very extensive Isaac's Square, the Senate House, the General Synod, the Palace of the Wind, which strengthens and the armed guard; 4, the Alexander Theatre, in the Nevsky Perspective; 5, the fine palace of the Imperial Assignat Bank; 6, the New Arsenal; 7, the Gostinno-Dvor, a great bazaar, two miles in circumference with a gallery of the Fine Arts, &c. The Field of Mars, adorned with a statue of Suwarrow, is extensive enough to admit 40,000 or 50,000 men to be reviewed in it. The Field of Mars is bordered on two sides by the imperial gardens, on the third by the Winter Palace, and on the fourth by a row of massive buildings. The most recent of the public monu- ments is the Alexander Column, erected in honour of the emperor Alexander. There are also a celebrated equestrian statue of Peter the Great, a granite obelisk, 82 feet high, in honour of Romanzov, and the above-mentioned statue of Suwarrow.

The Russian sovereigns have done much to promote science and learning; academies and schools have been founded and liberally endowed by them, and learned men invited from foreign countries. Among these establish- ments are the university, founded in 1819, which has neither a theological nor a medical faculty; the academy of sci- ences, founded in the year 1725 by Leblintz; the academy of fine arts; the pedagogical institution for train- ing teachers in the higher departments of learning; the ecclesiastical seminary in the convent of St. Alexander Nevsky; the medical, moral and historical; the Imperial Academy of Sciences, the academy of the Oriental institution; numerous institutions for the army and navy; the mining academy; the female schools of St. Catherine; the Smolnoi convent, and the founding hospi- tal at Leningrad. There are besides many private masters and governesses in families, who are mostly Germans. The collections of all kinds are very rich. The imperial public library consists of about 400,000 volumes; that of the academy of sciences, of 100,000; and that of the historic society, of 70,000. The principal collections are the zoological, the antiquarian, and that of Asiatic coins in the academy of sciences; the cabinet of coins of the Oriental institution; the splendid collection of min- erals of the mining academy, in which there is a lump of iron weighing 23 lbs. Some of the more remarkable collections and curiosities which are in the academy of sciences are:—

At the Hermitage, Romanzov's museum, the extremely rich collections of exotic plants in the hothouses of the botanical garden, and many private collections. The hospitals or charitable institutions of all descriptions are very numerous and well supported, rivalled perhaps only by those of London, the virtue of charity being one of the most prominent features of the Russian character. The most conspicuous of these are the hospitals of which 3243 were of stone, and the remainder of wood: this seems a small number in proportion to the population, but some of the houses are extremely large; in 1833 there were 12 houses each inhabited by above 1000 persons, 12 by 300 to 1000 persons, 22 by 200 to 300 persons, and 671 by 100 to 200 persons.

The ground on which St. Petersberg stands is low and swampy, and the surrounding country is a morass and forest, except where it has been drained and made into meadows and art. It has been calculated that, on an average of 10 years, there are 97 bright days, 104 rainy, 72 of snow, and 97 unsettled. The ice in the Neva never breaks up before the 20th of March, and is rarely broken after the 27th of April: the earliest time of the river's freezing is the 20th of October, and the latest the 1st of December. The few bright days are generally during the greatest heat or the severest cold. The spring is very short, and the winter long; it is the season of outdoor sport once, which all classes hasten to enjoy, in the adjacent villas, in hospitality and social amusements. In sum- mer the nights are bright and generally warm. During the summer the parks are crowded, the crowds are lively, the music, promenades on the streets in every direction, and the simple melody of the popular ballads floats on the air, from the boats that glide on the canals and the smooth surface of the Neva. Charmed by the novelty and beauty of the scene, the stranger, on expecting the approach of night, continues to linger till he is beguiled of his sleep, and sees with surprise the first beams of the rising sun gild the summits of the palaces and temples. In autumn St. Petersberg is one of the most disagreeable spots on the face of the earth. On the whole winter is perhaps the best season; at least it has many ad- vantages over the foggier winter of more southern climes. The cold, when it once sets in, is equal and constant, and it never penetrates deeply into the soil, so that the hard snow is convenient and agreeable; the Russians too know how to defend themselves against the cold better perhaps than any other people. All commercial in- terests are suspended during this season. In winter, the citizens indulge their national fondness for luxury and amusements. The great masked ball (as it is called) on New Year's Day brings together persons of all classes in the Winter Palaces: tickets are very easily obtained, and above 30,000 are usually issued. Nobody however is masked, nor is there any dancing. The river being frozen over for several months, the surface presents a scene like that which was exhibited when a fair was held on the Thames, nearly resembling Bartholomew fair. The popu- lace are amused with swings, roundabouts, and the like, and above all by the ice-hills, which are inclined planes of considerable height, covered with blocks of ice. The ascent is by a flight of steps at the back. A low sledge with one person in it glides down the plane with such rapidity that it is carried by the impetus to the next ice-hill, when the driver takes his sledge on his back, ascends the steps, and descends on the other side, thus being the favourite amusement of the Russians. There are likewise great popular amusements during Lent in Isaac's Square.

In summer all those who have the means go into the country. There are numerous country-houses in the islands, and on the road to Peterhof, St. Petersburg, Kronenburger. Of the islands in the Neva, north of St. Petersburg, that of Krestovskoy is the most beautiful; the isle of Yelagin has an imperial summer palace with a fine park. Kamennoi is the residence of the grand-duke Michael. Peterhof, on the bay of Cronstadt, the road to which is a noble causeway.
bordered by fine gardens and country-seats, has a large garden, and a water-front. A great dome is generally celebrated here on the 13th of July, in honour of the birthday of the empress Alexandra, when the gardens are splendidly illuminated and enlivened with bands of music, and above 100,000 persons are assembled. Oranienbaum, on the Gulf of Finland, the summer residence of the grand-duke Michael, is still more beautifully situated than Peterhof. Zarskoje-Selo is a very magnificent imperial country-seat, with an immense park and noble palace. A large portion of this palace was burnt down in 1829. At a short distance is the Pulkowseburg, on which the emperor Nicholas has caused a fine observatory to be erected, and furnished with the best instruments. Pavlovsk, near the town of the same name, is an imperial country-seat, with a fine park laid out in a great man style by Brown. At Gatchina, T Chesme, and Strelna there are likewise country-seats belonging to the Imperial family. [Cronstadt: Narva.]

According to the account given by the chief of the police for 1839, the population amounted in that year to 476,386, of whom 338,512 were males and 138,874 females: in 1838 the total was 469,720, so that there was an increase in 1839 of 8666. It appears from M. Köppen, that of the 469,720 inhabitants, in 1838, there were in the city and its district, including Cronstadt, only 53,883 males who had their legal settlement there. Supposing the total to be 109,000, including females, there remain 350,000 strangers from other provinces, of whom the great majority are males. We quote from the official tables a few instances:

| Persons not of noble birth | 19,210 | 9,687 |
| Artisans included in the guilds | 19,238 | 3,692 |
| The garrison, not including the officers | 48,406 | 10,336 |
| Domestic servants | 52,397 | 14,674 |
| Workmen of the class of peasants | 103,237 | 23,076 |

St. Petersburg is not only the capital but the greatest manufacturing city of the empire. There are above two hundred manufactories of different descriptions, some carried on by private individuals, of silk, cotton, woollen, leather, glass, and silver articles, watches, surgical instruments, paper, snuff and tobacco, sugar, &c. There are other works of which the government has considered it advisable to carry on upon its own account; such are the great manufactories of tapestry, a large manufactuary of aqua-foritas, with an assay-office and a mint; a plate-glass manufactuary, which produces mirrors 14 feet high and 4 feet wide; a porcelain manufactuary; a great manufactuary of cotton and linen, in which steam-engines are employed, at Alexandrovsk, near the city; a considerable part of this manufactury was last year destroyed by fire. The government has likewise a cannon-foundry and powder-mills.

The commerce of St. Petersburg is very considerable.

* The construction of an iron railway from St. Petersburg to Pavlovsk and Zarskoje-Selo has greatly increased the number of visitors to those places.

Cronstadt is the harbour. The following is the official account for the year 1839—arrived at Cronstadt, in 1839, 1378 ships, of which 912 with cargoes and 466 in ballast; 1395 sailed, of which only 27 were in ballast—of these 30 had wintered at Cronstadt; this year only 33 remained to winter. Above 700 of these ships were English. The steamers belonging to Lübeck performed twenty-one voyages, those to London twelve, to Härve eight, and to Revel twenty-one. Above 12,000 barks bring to St. Petersburg from the interior articles of Russian produce and manufactures for the consumption of the capital and for exportation. The total value of the imports was 198,961,366 rubles (in bank assignats), and the value of the exports 132,016,295 rubles; total 330,977,661 rubles. Deducting 2,564,445 rubles, the value of the goods exported and imported by the captains of ships and passengers, the remaining operations were effected by 170 commercial houses, of which 94 transacted business under a million of rubles, and 76 above that amount. Three houses did business to the amount of more than seven millions, two of eight millions, three of ten millions, one of twelve millions, one of nineteen millions, and one of twenty-six millions. Among these eleven houses there is not one Russian name; they are all German and English, except one French. The exports are hemp, flax, tallow, leather, iron, tobacco, canvas, coarse linen, bees-wax, linseed, linseed-oil, tar, potato, &c. The increased exportation of wool deserves to be noticed. From 1800 to 1814, the average annual quantity exported was under 20,000 poods; from 1814 to 1824, under 36,000 poods; from 1824 to 1834, 112,000 poods; and in 1838 it was 360,760 poods. The imports are colonial produce of all kinds, manufactures of silk, cotton, hardware, French wines, jewellery, and all articles of luxury and fashion. The immense preponderance of the trade with England is proved by the number of ships employed in it. The effects of a rupture with England may be inferred from the fact that in the year 1806, which followed the alliance between Alexander and Napoleon, concluded at Tilsit in September, 1807, the value of the imports fell to 1,152,000 rubles, that of the exports to 5,875,000 rubles, and the duties of customs from five millions to 918,000 rubles.

The actual revenue now derived from the customs is about 50 millions of rubles. (Schmidtlin, La Russie et la Pologne; Hörschelmann, Stein's Handbuch; Conversations Lexicon; Cannabich, Lehrbuch der Geographie; the Russian Journal of Commerce, and Journal of the Department of the Interior; and Plan of St. Petersburg, published by the Society for the Diffusion of Useful Knowledge.)

Though by no means so complete as could be wished, the following table will serve as an architectural synopsis of the more remarkable structures of St. Petersburg, few of which, it must however be confessed, are of high architectural quality, or calculated to stand the test of critical examination, although from their magnitude and general air of stateliness they produce a favourable first-sight impression on the stranger:—

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<td>Treuza Palace</td>
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<td>Oruchsky's Hospital</td>
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<td>Manège of the Imperial Guards</td>
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Front, Ionic hexastyle, attached columns. Interior a rotunda with 24 columns. Corinthian order on basement. Centre an octastyle prostyle. Entirely constructed of cast-iron. Style Gothic. Dimensions 142 by 57 feet. Previously designed by Quarenghi, and erected temporarily in timber; now executed in metal by Clarke and Pratt. Shaft a granite monolith, 64 feet high, surmounted by a colossal figure of Faith.

PEETERSFIELD, a market-town, parish, and parliamentary borough in the hundred of Finch-Dean, and in the present northern, but in the old southern division of Hampshire. The town, which is on the road from London to Portsmouth, is 62 miles south-west from London, and 16 miles east by south from Winchester, direct distances. It is a clean country town, partly lighted with gas, tolerably paved, and amply supplied with water. The trade is unimportant, but fairs for sheep and horses are held March 5, July 10, and December 11. The market-day is Saturday. The assessed taxes levied in 1830 amounted to 540l. The population of the town and parish in 1811 was 1865. The living, attached to the chapelry of Petersfield, is a curacy, which, with the rectory of Burton, are in the diocese of Winchester.
In other works, it is stated to have been incorporated by a charter of that epoch, which is confirmed by the Report of the Commissioners on the boundary of the borough. The town is governed by a mayor, chosen annually at the court-leet of the lord of the manor, but the functions of the mayor is merely nominal. The borough of Petersfield returned two Members of Parliament and one Member of Edward I., and two members continuously from the reign of Edward VI. till the passing of the Reform Act, since which it has been represented by one member. The present parliamentary boundary includes the old borough of Petersfield and the tithing of Sheet; the parishes of Burton, Lys, and Froxfield; the tithings of Ramsden, Langrish, and Oxehoun. In the parish of East Meon, and also the parish of Steep, except the tithing of North and South Emsden. (Sixteenth Report of the Commissioners on Charities, p. 296; Reform Act and other Parliamentary Papers; Warter's Hist of Hampshire, &c.)

PETERWARDEIN, or PETERVARA, the principal and frontier fortress of Slavonia, the Gibraltar of Hungary, is situated in 44° 11' N. lat. and 19° 55' E. long., in the neighbourhood of some mountains and fruitful hills, on the right bank of the Danube, near the angle formed by the sudden change in the course of that river from due south to east. On a rock isolated on three sides stands the upper fortress and the hornwork; on the northern foot of the rock lies the lower fortress, which includes what is properly called the principality. It commands the Danube, whose watered bath the walls on the west and south sides. It is a place of extraordinary strength both by nature and art. As a precaution in case of a very close siege, there is water below the surface of the Danube. The lower fortress has very broad and deep moats, which may be filled with water from the Danube, lofty walls, and many bastions and turrets, by which it is separated on the south side from the two suburbs of Novina and Roebuchali. One principal street, and two others parallel to it, with a pretty extensive parade, form the whole town, which consists of only fourteen public buildings and forty-eight houses, most of the latter being only storehouses. The principal buildings are the arsenal, the residence of the commandant, and the Roman Catholic parish church, formerly belonging to the Jesuits. Besides the two above-mentioned suburbs, some writers reckon the village of Bukowiza, about a league distant, as belonging to Petersfield. The population of the town, the two suburbs, and Bukowiza, including the garrison, is stated to be 6500. The fortress is capable of containing a garrison of 10,000 men. French troops are connected, by a bridge of boats over the Danube (here 700 feet wide, and from 30 to 60 feet deep), with the town of Neusatz, on the opposite bank.

(Von Jenny, Handbuch fur Reisende in dem Osterreicshischen; W. Blumine, Neueste Geheime der Oesterreichischen Monarchie.)

PETIOLE is that part of the leaf commonly called the stalk; it is usually a contract part of the leaf through which the succulent fluid passes from the trunk, but in other cases it is thin, expanded flat, or rolled up in a sheathing manner, when it is scarcely to be distinguished from the blade of the leaf itself. It is the opinion of some botanists that the leaves of endogen, in which the veins are parallel instead of being reticulated, consist exclusively of petiole, but this seems contradicted by grasses which have both a petiole and lamina, with parallel veins.

PETIS DE LA CROIX, FRANCOIS, a learned French Orientalist, born in Paris, 1653, was the son of the king's interpreter for the Oriental languages, and received an education to qualify him for the same employment. At the early age of sixteen he was sent, by the minister Colbert, to reside in Egypt. He spent several years at Aleppo, Isphahan, and Constantinople, where he became master of the Arabic, Persian, and Turkish languages. During his stay at the first-named city he translated into elegant Arabic an account of the campaign of Louis XIV. in the Levant, which was published in 1671. He returned to Paris in 1680, and two years afterwards was sent to Morocco, as secretary to M. de Saint Amand, who had been appointed ambassador to Muley Ismail, the reigning sultan. He is reported to have pronounced before that sovereign a speech in Arabic which excited the admiration of the whole court by the facility of the delivery and the elegance and purity of the style. In the two following years he accompanied the French armaments against Algiers, under Duquesne, Tourville, and D'Amesville [ALGHERS], filling under each of these generals the situation of secretary-interpreter of the marine, in which capacity he was employed to translate into Turkish the treaty of peace concluded in 1684, between France and the regency of Algiers. In 1685 he performed the same office with respect to the negotiations with Tunis and Tripoli, when he gave decisive proofs of his integrity and patriotism. It is asserted that while the negotiations with the latter were going on, a condition of the treaty, that the bey of Tripoli should pay to the king of France the sum of 600,000 livres was offered a considerable bribe if he would put down in the original treaty Tripoli crowns instead of French livres, which would have made a difference of a sixth part, but his fidelity to his sovereign was incorruptible. In 1687 he assisted the Duke de Mortemart in concluding a treaty of peace and commerce with the king of Morocco. In short, it was through his intervention that all the affairs between France and the Eastern courts were transacted from the year 1680, when he was first employed in diplomacy, to the time of his death. As a reward for his eminent services, Petis was appointed, in 1699, Arabic professor to the College Royal de France, and after the death of his father (1695) the office of Oriental interpreter was also conferred upon him. From this period Petis never left his native country, but employed himself in compiling a dictionary, which includes with most of which he was perfectly well acquainted; for, besides the Arabic, Turkish, and Persian, he is said to have been well acquainted with the Mogul, Armenian, and Ethopian languages.

He died at Paris, December 4, 1713, at the age of sixty, leaving a son, named Alexandre Louis Marie, who succeeded him in his office of secretary-interpreter of the marine, and made likewise several translations from the Arabic to French.

His principal publications are, 'Les Mille et un Jours' (the thousand and one days), translated from the Persian, Paris, 1710-12, 5 vols. 12mo.; 'Contes Turcs,' a translation of the Persian of Steuer, and 'Les Turcs et le Timur,' translated from the Persian of Sheref-ed-din Ali Yezdi, Paris, 1722, 4 vols. 12mo. Most of his works however still remain in manuscript; these are 'Travels through Syria and Persia, from 1670 to 1680;' a 'History of the Conquest of Syria by the Arabs,' translated from the Arabic of Wadkei, 'The Bibliographical Dictionary of Haji Khalil,' from the Turkish; a 'History of the Ottoman Empire,' from the same language; a 'Dictionary of a Arabic and Persian Vocabulary;' a 'Western Monuments of Egypt;' an 'Account of Ethiopia;' a treatise entitled 'Jerusalem, Modern and Antient;' and several others, the titles of which are given at full length in the 'Memoires de la Societe Royale des Sciences'; and the like. In some biographies of Petis de la Croix, a 'History of Gengis-Khan,' from the Persian (Paris, 1710), is attributed to him; but this is an error, since the above translation, though edited by Petis, was the work of his father, whose Christian name was also Francois.

(Goujet, Memoire Historique et Litteraire sur le College Royal de France, Paris, 1735, 4to.; Biographie Universelle, vol. xxiii.)

PETIT, JEAN LOUIS, was born at Paris in 1674. Lître, a celebrated professor of anatomy, being a resident in his father's house, inspired the young Petit with such a zeal for the same study, that at twelve years of age he accepted the task of preparing the subjects for his preceptor's lectures, and to be placed at the head of his anatomical class. At sixteen he was apprenticed to a surgeon; and so great was his zeal in his studies, that Mareschal, the chief surgeon of the Hospital la Charité, on going very early in the morning to visit his patients, more than once found Petit asleep by the door, awaiting his arrival, that he might secure a good place during the operations. In 1692 he obtained the post of surgeon in the Hospital la Charité, and was sent to Tripoli, 1700, when he returned to Paris and obtained the degree of Master in Surgery. Here he delivered several courses of lectures to a school of anatomy and surgery which he established, and in which many of the surgeons among the first surgeons in Europe were pupils. His reputation rapidly increased, and he was elected a member of the Academy of Sciences at Paris, of the Royal Society of
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London, and of many learned societies. In 1731, at the foundation of the Academy of Surgery in Paris, of which he was one of the most active promoters, he was elected director. He died in 1760. He was for many years the most renowned surgeon in Europe, and contributed more to its advancement as a science than any one who had preceded him. He not only raised the character of surgery in France, but many of his pupils and successors were invited to attend at different parts of Europe, and by carrying thither his improvements and some of his zeal, gave a fresh stimulus to its progress.

PETIT was of his death. Petit had been engaged twelve years in the composition of an extended 'Treatise on Surgery.' It was completed and published in 1774, by De Laune, and is still a standard work. The other most important of his surgical writings are a 'Systematic History of the Diseases of the Bones and Joints' published in the Memoirs of the Academies of Surgery and of the Sciences.

PETIT, PETER, was born 21st December, 1598 (Niceon, or 5th December, 1594 (Bisg. Univera), at Montlieu, a small town in the present department of the Allier. When young, he occupied himself in mathematical studies and experimental philosophy, which he afterwards evinced considerable aptitude in applying. In 1626 he succeeded his father as director of the Pans departinent of the 'Bureau de l'Officier du Corps de Chirurgiens,' which office he held in 1633, after the death of his parents, and then removed to Paris. Here he was introduced to the Cardinal de Richelieu, and appointed by that minister to be his personal surgeon. Between this time and 1649 there were conferred upon him the appointments of provincial commissary of artillery, intendant of fortifications, and geographer, engineer, and counsellor to Louis XIII. Upon his return from Italy, in connection with a petition to the 'Diotropic' of Desevars, which led to his being introduced to Fermat, who had also questioned the soundness of the Cartesian theory. Subsequently however he became very inactive, and after a few years in ordinary order revised his opinions. In 1646-7, a series of experiments made by Pascal and Petit confirmed the explanation then recently given by Torricelli of the phenomena of the barometer and common barometer. Petit died on 25th August, 1657, at Lagni on the Marne, about five leagues from Paris.

The following list of his works is given by Niceon, in the forty-second volume of the 'Memoires des Hommes Illustres.'--1. 'L'Usage du Comptes de Proportion,' Paris, 1634, 8vo; 2. 'Discours Chronologiques,' Paris, 1636, 4to; 3. 'Carte du Gouvernement de la Capelle'; 4. 'Avis sur la Conjonction propose des Mers Océano et Méditerranée par les Rivieres d'Aude et de Garonne,' 4th edition, 1642; 5. 'Observation sur la première fois en France,' Paris, 1647, 4to; 6. 'Discours touchant les Rémièdes qu'on peut apporter aux Inondations de la Rivière de Seine dans Paris,' 1658, 4to; 7. 'Observations a L'Eclipse du Soleil du 11 Octobre 1666,' Déclarations -- Novi Systematis Conformati,' published in Duhamel's 'Astronomy,' Paris, 1659-60 (the object of the second of these tracts is to prove that the latitude of Paris was not permanent, an opinion which had been entertained with regard to geographical positions generally by the Italian astronomer Maria); 8. 'Dissertation sur la Nature des Comètes,' Paris, 1663, 4to (written at the desire of Louis XIV., to lessen the alarms of the people occasioned by the appearance of the comet of 1664); 9. 'Lettre touchant le Jour auquel on doit céliber la Fête de Pâques,' Paris, 1666, 4to; 10. 'Dissertation sur la Nature du Chaud et du Froid,' Paris, 1662, 4to.

(Montils. Histoire des Mathématiques. Niceon.)

PETITION. A petition is an application in writing, addressed to the lord chancellor, the master of the rolls, or to the Equity side of the Court of Exchequer, in which the petitioner states certain facts as the ground on which he prays for the order and direction of the court. Petitions are either cases petitions or not. A cause petition is a petition in a matter of which the court has already possessed itself, and by virtue of which or of a letter of the chancellor. In such case, and the decision is final. The petition and the affidavit in such cases must be filed at any time after the petition is answered. If a petitioner choose to serve a party with a petition, whose possession is considered by the court to be unnecessary, he must send by such party the cost of attending at the hearing of the petition.

A petition is heard in court by the counsel for the petitioner stating the substance and prayer of the petition, and by reading or briefly stating the contents of the affidavit in support of the petition. If the petition is not a public petition, or the prayer of the petition is opposed by any of the parties who have been served with it, they are heard by their counsel, and their affidavits also, if any have been filed, are read or briefly stated. The petition is then put to the court. Before any order made on a petition can be passed, the original petition must be filed with the clerk of reports. The order itself in the present practice recites no part of the petition excepting the prayer.

PETITION OF RIGHT. Where the crown or such subject has a cause of action against a subject, the ordinary mode of putting that cause of action into a course of legal

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INVESTIGATION is by the king's writ, requiring the party to appear in court to answer the complaint. Where the claim is against the crown itself, as this course cannot be pursued, the party may appeal, finding a new writ by which the law is to present a petition to the crown, praying for an inquiry and for the remedy to which the party conceives himself to be entitled. As by Magna Charta the king is not to delay right, he is bound, if the petition contains a claim of a just and equitable claim, to indorse the petition with the words 'let right be done,' which indorsement operates, in the case of a claim of a legal nature, as a warrant and command to the lord chancellor to issue a commission of oyer and terminer to inquire into the claim. A commission accordingly issues to six or eight persons, who summon a jury, of whom not less than twelve or more than twenty-three are impannelled, and who, after the evidence which the petitioner, or, as he is called, the suppliant, has to adduce in support of his statement, if the jury negatvte the allegations contained in the petition, the commission is at an end; but the suppliant is at liberty to sue out a new commission or commissions till a jury return an inquisition in which the allegations are found to be true. The crown may, upon this return, insist that the facts alleged by the suppliant, and found by the inquisition, were not of a nature to entitle the suppliant to any remedy which he claims. The question of law thus raised by demurrer to the inquisition is argued before the lord chancellor. The crown however, notwithstanding the finding of the jury, may claim that the truth of these allegations, or, admitted to be true, may allege other facts which show that the suppliant is not entitled to what he claims. To such facts the suppliant must reply. Any issue of fact joined between the parties is carried into court of trial, and determined in the court of King's Bench, the lord chancellor not having the power to summon a jury. Final judgment is given for or against the suppliant according to the result of the argument upon the demurrer or the trial of the issue.

PETITION OF RIGHT. In the first parliament of Charles I, which met in 1626, the Commons refused to grant supplies until certain rights and privileges of the subject were to be solemnly recognized by a legislative enactment. With this view they framed a petition to the king, in which, after reciting various statutes by which their rights and privileges were recognized, they prayed that no man be compelled to make or yield any gift, loan, benevolence, tax, or such-like charge, without common consent by act of parliament, that none be called upon to make answer for refusal so to be impracticable as to be maintained, only by the law of the land, or by due process of law, and that the king's special command, without any charge,—that persons be not compelled to receive soldiers and mariners into their houses against the laws and customs of the realm,—that commissions for proceeding by martial law be revoked: all which they pray as their rights and liberties according to the laws and statutes of the realm.

To this petition the king at first sent an evasive answer: 'The king willith that right be done according to the laws and customs of the realm, and that the statutes be put in execution. But if martial law be the means of correcting any wrongs or oppressions contrary to their just rights and liberties, to the preservation whereof he holds himself in conscience obliged, as of his own prerogative.' This answer being rejected as unsatisfactory, the king at length promised to proceed in many matters notwithstanding.

'Let right be done as it is desired.' (1 Car. I., c. 1.)

Notwithstanding this however the ministers of the crown caused the petition to be printed and circulated with the first intention to answer it.

PETITOT, JOHN, an eminent painter in enamel, the son of a sculptor and architect, was born at Geneva, in 1607. Being designed for the trade of a jeweller, he was placed under the direction of Bordier, and in this occupation was engaged in the preparation of enamels for the jeweller's business. He was so successful in the production of colours, that he was advised by Bordier to attempt portraits. They conjointly made a few miniatures, and though they still wanted many colours which they knew not how to procure, their attempts had great success. After some time they went to Italy, where they consulted the most eminent chemists, and made considerable progress in their art, but it ended in a(wx) in January, 1638, when they removed after a few years, that they perfected it.

In London they became acquainted with Sir Theodore Mayer, first physician to Charles I, and an intelligent enchanter, who by his experiments discovered the principal colours to be used in enamel, and the means of vitrifying them, so that they surpassed the boasted enamelling of Venice and Limoges. Petitot was introduced by Mayer to the king, who recommended him to the crown, and gave him apartments in Whitehall. He painted the portraits of Charles and the royal family several times, and copied many pictures, after Vandycck, which are considered his finest works. That painter greatly assisted him by his advice, and the king frequently went to see him paint.

On the death of Charles, Petitot retired to France with the exiled family. He was greatly noticed by Charles II, who introduced him to Louis XIV. Louis appointed him his painter in enamel, and granted him also apartments in the Louvre. He painted the French king many times, and, amongst a vast number of portraits, those of the queens Anne of Austria and Maria Theresa. He also etched portraits of many of the most celebrated pictures of Mignard and Lebrun.

Petiot, who was a zealous Protestant, dreading the effects of the revocation of the Edict of Nantes, solicited leave, but to no purpose. He went to London, there, and in the north, in which place, in 1672, he died. The king employed Bossuet to endeavour to convert him to Romanism, in which however that eloquent prelate was wholly unsuccessful. At length Louis permitted him to depart, and leaving his wife and children in Paris, he proceeded to his native place, where he was soon after joined by his family. Arrived now at eighty years of age, he was sought by such numbers of friends and admirers, that he was forced to remove from Geneva and retire to Vevey, a small town in the canton of Berns, where he continued to labour until 1691, in which year, whilst painting a portrait of his wife, he was suddenly attacked by apoplexy, of which he died.

Bordier, in conjunction with whom he worked for fifty years, and afterwards alone, made himself so noted for the beauty of his pictures, married his wife's sister. In the museum of the Louvre there is a collection of fifty-six portraits by Petitot; but his principal work is a magnificent whole series of twenty-four large pictures, representing in monochrome, in the collection of the duke of Devonshire, painted from the original in oil by VanDyck, in the possession of the earl of Hardwicke. This enamel is nine inches and three-quarters wide, and he quartered, a prodigious size for a work of this description, and by far the largest that had been then, and for a century and a half afterwards, executed. It is dated 1649. This work was some years ago entrusted to the late Mr. Bone, the enamel painter and restorer, but he was so seriously damaged by a fall, by which a large portion of the enamel had been displaced. Different from the practice
now adopted, the plate on which this was painted is formed upon a very thick piece of gold, the back having cross-bars attached of the same metal, filled up with enamel, the metal alone weighing more than three ounces.

In the earlier part of his career Pietro received twenty guineas for a portrait, which price he afterwards raised to forty. He generally used plates of gold, but seldom copper, and sometimes, it is said, silver, though this seems improbable, for that metal generally has the effect of tinging the engraving of a picture. His work was not painted in England, we have never met with one the plate of which was composed of silver. His custom was to have a painter to draw the likeness of his sitter in oil, from which he commenced his enamel, and then finished it from life. He never worked by the picture, but was a great imitator of him, but generally obtained one or two sittings for the completion.

The pictures which Pietro painted in England are executed in more free style, and have a greater depth and richness of tint than those executed in France, whilst the latter are remarkable for the extreme delicacy of touch and the exquisitely elaborate finish. He may be called the inventor of enamelled pictures, for though subjects of fruit and flowers were long before painted on this material for the purposes of jewellery, he was the first who made the attempt to execute pictures, and it was he who at once commenced the new species of art, which was then neglected or despised, and which he arranged to suit the tone, colour of his works, a defect observable in the pictures of all other practitioners in enamel till the present century, is a prevalence of purple in the flesh tints.

He had a son, John, who followed this art in England, but it was his grandson, the first Duke of Aosta, who was the most celebrated of his name, and who was followed by those of the father. (Walpole's *Anecdotes of Painting*, by Dallaway; *Biographia Universelle.*

PETRA (Irpa, or Irpira), which lay nearly half way between the Dead Sea and the head of the Elatium Gulf, was one of the most important towns in the north of Arabia, and the capital of the Nabathæi. It is in all probability the Sæa (720) of the Old Testament, which signifies, like the Greek word, "a rock." This town, which originally belonged to the Edomites, was taken by Amaziah, King of Judah, who changed its name into that of Joktheel (2 Kings, xix. 7; compare Joseph., *Antiq.* ix. § 16); but it seems in later times to have belonged to the Moabites. (*Ita., xvi. 1.*

Petra is described by Strabo (xvi. p. 779) and Pline (*Hist. Nat.*, vi. 92) as situated on level ground about two miles in size, and surrounded by a precipitous wall. The town itself was well watered, but the surrounding country, and especially the part towards Judea, was a complete desert. It was 600 Roman miles from Geza, and three or four days journey from Jericho. In the time of Augustus, Petra was a large and important town, and its greatness appears to have been principally owing to its situation, which caused it to be a great halting-place for caravans. A friend of Socrates, Athenodorus, who resided at Petra for many years, informed the geographer that many Romans lived there, as well as other foreigners. (Strabo, xvi. p. 779.) It maintained its independence against the attempts of the Greek kings of Syria (Diod. Sic. xiii. 97), and was governed by a native since the time of Strabo.

It was taken by Trajan (Dion Cass., lxxviii. 14); and it appears from coins (Eckhel, *Doctr. Num.* ii. 563) that Hadrian called it after his own name (*Alpeopolis*).

It is in the very extremity in the Valley of the Yura, two days' journey from the Dead Sea, and the same distance northeast of Akaba. They were visited by Burchardt in the year 1812, by Captains Irby and Mangles in 1818, and more recently by the Lord Burchard's. Its site is very desolate and hasty, but a minute description of the ruins has been given by Captains Irby and Mangles, from whose account we extract the following remarks. The principal entrance to the town has been through a passage of two narrow doors. A large valley extends for nearly two miles; and on each side of it are numerous tombs cut out of the rocks, which, as you approach nearer the city, become more frequent on both sides, till at length nothing is seen but a continued street of tombs. Near to the termination of this valley there are the ruins of a magnificent temple.

The best description of the ruins of Petra is given in Laboře's *Voyage de l'Arabie Pétrée*, Part, 1830, of which an English translation was published in 1836.

PETRACCA, Francesco, in Petrazzo, in July, 1340, was the son of Pietro, or Petracco (an idiomatic form of Pietro), a notary of Florence, who was banished in 1302, at the same time as Dante and others of the Bianchi faction. (*Dante.* The true name of Petracco was Francesco de' Bartolomeo, or Petracco, or Petracco di Lapi or de Laipi, a name which afterwards changed into the more euphonious name of Francesco Petracco. After losing all hope of being restored to his native town, Petracco removed with his family to Avignon, where Pope Clement V. had fixed the residence of the holy See, and whither strangers from every country resorted. His son Francesco, after studying grammar and rhetoric, was sent by his father to Montpellier, and afterwards to the University of Bologna to study law, which was considered the most respectable profession.

Young Petracco however had little taste for the law, especially as it was taught in that age, and he devoted much of his time to reading and copying MSS. of the classic writers. His father and mother having died at Avignon nearly about the same time, Petracco left Bologna, and on his arrival at Avignon he found that his paternal inheritance was but little. He assumed the clerical dress, without however having taken priestly orders, that he might exhibit the more openly, that is to say, the ceremonial dress of good company at the Papal residence. The Papal court of Avignon was very gay and even licentious; and Petracco, who was then only two or twenty years of age, and of a handsome person, was received into one of the most gay courts of the time.

But his love of pleasure was tempered by the love of study. He contracted a friendship with the jurist Soranzo, with the canon John of Florence, who was apostolic secretary, and with James Colonna, bishop of Lombe in the city of London. He spent much of their time in literary discussions and excursions in the mountains, with two other friends of similar tastes, whom Petracco has recorded under the classical names of Socrates and Laelius (*Triumph d'amor*, ch. 4). On his return to Avignon the Pope, who was beneficent to those in Petracco's apartments in his own palace, and became his patron; and when his father, Stephen Colonna, a sturdy warlike old baron, but not illiterate, and well known for his quarrels with Boniface VIII., came on a visit to his sons, Petracco was introduced to him, and

soon won his favour. Petracco, who was an admirer of the heroes of ancient Rome, fancied that he saw in Stephen Colonna their warlike and ancient spirit, and addressed to him, he calls him "the hope of the Latin name" (*Sonetto* 10). Azzo da Correggio, lord of Parma, having come to Avignon to defend, before Pope Benedict XII., his title to that sovereignty against the claims of Marsigli Bossi, became Petracco's disciple, and desired Petracco to act as his advocate at the Papal chancery. Petracco undertook the cause and won it. Azzo had brought with him Guglielmo FasArena, a learned man of Verona, the author of a work *De Originius Romanum,* a kind of his-
promises that at least the tragical hero of 20th century, the poet from Avignon, Laura, was satisfied with the beauty of the young lady who happened to be near him, and he conceived a violent passion for her. The lady’s name was Laura. According to the received opinion, supported by Petrarch himself, he mentions her family name, she was the daughter of Andulbert of Noves, a small place in the territory of Avignon; she had a considerable fortune, and had married about two years to Hugh de Sade, a gentleman of Avignon. When Petrarch first saw her, she was nineteen years of age. The attractions of Laura’s person have been so fully described and probably exaggerated by Petrarch, that it is needless to say anything on the subject. But the qualities of her mind, which he also praises, seem to have been truly remarkable in a provincial lady of those times and of no very exalted rank. In her conduct for a long course of years towards her husband, courteous, and impetuous admirer, whom she could not help meeting wherever she went, at parties of pleasure, in walking, or at church, she exhibited a rare mixture of firmness and courtesy, of respect for her own character, and a considerate regard for her enthusiastic lover. She has been called a coquette, but not to judge the conduct of a Frenchwoman of the fourteenth century by the standard of manners in England or even France in the nineteenth century. To those acquainted with the manners of Italy and Spain in the present day, the passion of Petrarch for Laura de Sade is nothing uncommon. Such attachments are frequent, and though often of a passionate nature, are certainly not always so. That the attachment of Petrarch to his Laura was owing to her manners, to Laura’s sense of duty, or to her indifference, or to both, that it did not drive her lover to madness and ruin was owing to her consummate address of which we have abundant evidence in Petrarch’s own confidences. He went to her on a declaration, she sternly rebuked him, and avoided his presence; but when she heard that he was ill, she assumed towards him the manners of a friend interested in his welfare; she tempered his passion, and in making him satisfied with her conversation, and with giving vent to her feelings in poetry. (Petrarch’s Latin Epistle to James Colonna, bishop of Lombre.) She was probably flattered by his verses, which brought no imputation on her character, and made her the subject of everybody’s sympathy. Petrarch’s sonnets and canzoni in praise of Laura circulated throughout Europe. When Charles of Luxembourg, afterwards the emperor Charles IV., came on a visit to Avignon, one of his suites was afterwards celebrated by Petrarch, and being introduced to her in the midst of a large assembly, he respectfully begged to be allowed to kiss her on the forehead as a mark of his esteem. (Petrarch, Sonnet 201.) It was not however without a violent struggle that Petrarch allowed himself to be led by her better judgment. For ten years after he had first seen Laura, his life was one continued strife between his passion and his reason. He left Avignon repeatedly, but he travelled about, returned, but was still the same. Wishing, if possible, to forget Laura, he formed a connection with another woman, and had by her a son, and afterwards a daughter. But still his mind recurred perpetually to the object of his first attachment. He took care of his illegitimate children, but broke off the connection. For several years he fixed his residence at Vaucluse, a solitary romantic valley near Avignon, on the banks of the Sorgue, of which he has given some beautiful descriptions. In a letter addressed to Laura, dated June 3, 1338, he assigns as a reason for his retirement, that he was disgusted with the vice and dissoluteness of the Papal court of Avignon, in leaving which, he says, he sang to himself the psalms of David. (Sonnet 206.) He also says, that he was tired of waiting for the fulfillment of his promises of honour and emolument made to him by the pope.

Meantime, year after year rolled on, and the beauty of Laura faded away. She became the mother of a large family. But Petrarch continued to see her with the eyes of youth, and to those who wondered how he could still admire her, he answered:

Plaça per allentar d’arre on sema.

(The bow can no longer wound, but its mortal blow has already been dealt; and if I had loved her as a person only, I had changed long since.) In the year 1343, sixteen years after his first sight of Laura, he was writing in the soberness of self-examination: ‘My love is vehement, excessive, but.exclusive.’ — No, not exclusive. — No, not to Laura, to Laura, to Laura. — No, not to Laura, but to Laura, to Laura, to Laura. — We have seen that Petrarch has beautifully described her passing away like a lamp which becomes gradually extinct when the wind of nourishment:

A stas de la morte. (De la morte, ch. I.)

When the news reached Petrarch in Italy, he felt the blow as if he had lost the only object that attached him to earth. He wrote on a copy of Virgil, his favourite author, the following sonnet: ‘I’ had lived thirty days of my youth, on the 6th of April, in the morning, and in the year 1327, that Laura, distinguished by her virtues, and celebrated in my verses, first blessed my eyes in the church of St. Claire, at Avignon; and it was in the same city, on the 6th of April, in the same month of April, in the morning, in the year 1348, that this bright luminous light was withdrawn from our sight, whilst I was at Verona, alas! ignorant of my calamity. The remains of her chaste mind and beatiful body were deposited in the church of the Cordeliers, on the evening of the same day. To preserve the painful remembrance, I have taken a bitter pleasure in recording it particularly in this book, which is most frequently read by my eyes, in order that nothing in this world may have any further attraction for me, and that this great bond of attachment to life being now dissolved, I may by frequent reflection, and a proper estimation of our transitory existence, be admonished that it is high time for me to think of quitting this earthly Babylon, which I trust will not be difficult for me, with a strong and manly courage, to accomplish.’ (Petrarch’s ‘Virgil,’ with this affecting memorandum, is now in the Ambrosian library at Milan. (Valder, ‘L’Amore e la poesia in Italia.’)

Here begins a new period of the life of Petrarch, and with it the second part of his love poetry. Hitherto he had written verses in praise of Laura; he now wrote versets on Laura’s death. He abandoned his own self, and by a second act he celebrated Laura, and being introduced to her in the midst of a large assembly, he respectfully begged to be allowed to kiss her on the forehead as a mark of his esteem. (Petrarch, Sonnet 201.) It was not however without a violent struggle that Petrarch allowed himself to be led by her better judgment. For ten years after he had first seen Laura, his life was one continued strife between his passion and his reason. He left Avignon repeatedly, but he travelled about, returned, but was still the same. Wishing, if possible, to forget Laura, he formed a connection with another woman, and had by her a son, and afterwards a daughter. But still his mind recurred perpetually to the object of his first attachment. He took care of his illegitimate children, but broke off the connection. For several years he fixed his residence at Vaucluse, a solitary romantic valley near Avignon, on the banks of the Sorgue, of which he has given some beautiful descriptions. In a letter addressed to Laura, dated June 3, 1338, he assigns as a reason for his retirement, that he was disgusted with the vice and dissoluteness of the Papal court of Avignon, in leaving which, he says, he sang to himself the psalms of David. (Sonnet 206.) He also says, that he was tired of waiting for the fulfillment of his promises of honour and emolument made to him by the pope.

Meantime, year after year rolled on, and the beauty of Laura faded away. She became the mother of a large family. But Petrarch continued to see her with the eyes of youth, and

Benedelta colui che à miglior riva

Value il mio cesto, e Tempia voglia avventura

Pero perch’è io non possa perla nove

(‘Benedetto colui che à migliore riva

Valore il mio cesto, e Tempia voglia avventura

Pero perché io non possa perla nove’

(Sonnet 206.)

More than twenty years after Laura’s death, when he was himself fast verging towards the grave, and when he was able to think of her with more composure, he drew from his memory a picture of the principles of the life of Laura, and the conduct of the woman who had made all the happiness and all the misery of his life. He describes Laura as appearing to him through a mist, and reasoning with him on the importance of impartially disposing of his mind and his fortune, and telling him that when she died she felt no sorrow except pity for him. On Petrarch entreaty her to say whether she ever loved him, she evaded the question by saying that although the subject was painful to him, she deemed it right to return to the passion by the coldness of his heart, but that when
she saw him sinking into despondency, she gave him a look of consolation and spoke kindly to him. 'It was by this alteration that himself, the Gonzaga of Mantua, had led us in the past, sometimes happy, sometimes unhappy, often wearied in body, but still I have led thee to where there is no more danger, and I have thus saved us both. There has been little change in our nobles and people, dost thou not proclaim thine to all the world, and I concealed mine. But complaint does not embitter suffering, nor does silence soften it.

'Vengi a minora il duol, perch' altrì il potere; Ne maggiur per andare lassandosi.' (Triumph de la Mort, ch. vi.)

We have dwelt at some length on this subject because it has acquired an historical importance, and has been the subject of much controversy. Unable to comprehend feelings we are taunted with, our contemporaries have either sneered at the passion of Petrarca forLaura; others have doubted its existence; whilst others again have disbelieved the purity of Laura's conduct. We have now however sufficient evidence to establish two facts: 1. that the attachment of Petrarca for Laura was real and lasting; 2. that Laura's conduct was above suspicion. What her inward feelings were towards the poet we have no means of knowing, and Petrarca himself does not seem to have over known. Laura appears to have been imbued with religious sentiments, united with serenity of mind, self-possession, discretion, and good sense. There have been doubts expressed concerning the identity of the Laura of Petrarca with Laura de' Medici, the heiress to the Medici and Chief of the Newer family who was said to resemble her. (Du Sade, Memoires pour la Vie de F. Petrarque; Foscolo, Essays on Petrarca; Baldelli, Del Petrarca e delle sue Opere, 2nd edition, Fiesole, 1837; and the article 'Laura' in the Biographie Universelle, Galignani.)

But the life of Petrarca was not spent in idle though eloquent wailings. He was an active labourer in the field of learning, and this constitutes his real merit and his highest title to fame. Besides the works which he wrote, he encouraged literature in others, and he did everything in his power to promote sound studies. Petrarca was a great traveller for his age; he visited every part of Italy, went several times to Germany, and once to Spain. Wherever he went, he collected or copied MSS., and purchased medals and other remains of antiquity. At Arezzo he discovered the 'Institutions' of Quintilian; at Verona, Cicero's Familiar letters; in another place, the epistles to Atticus; at Lido he found some orations of Cicero, which he transcribed; he also speaks of Cicero's book 'De Gloria,' of Varro's treatise 'De Rebus Divinis et Humanis,' and of a compilation of letters and epigrams of Augustus, which he has not been able to find. He collected authentic diplomas and charters from numerous others which were apocryphal. (Epistolae Semilibes, b. xx., ep. 5.) He was the friend and instructor of Boccaccio, John of Ravenna, and other Italian and foreign contemporaries. He was the founder of the Library of St. Mark at Venice. He encouraged Galeazzo Visconti to found the University of Pavia. In his extensive correspondence with the most distinguished persons of his time, he always inculcated the advantages of study, of the investigation of truth, and of a moral conduct; he always proclaimed the great superiority of intellectual over corporeal pleasures. He and his friend Boccaccio are justly considered as the revivers of classical literature in Italy. His amicability of kindness and respect and laudable tempering by the light of criticism which arose much later in Europe. It was this classical enthusiasm that led him to support the tribune Rienzi, and attach too great importance to events of the same kind that might not come down to us. (Rerum Memorandiarum, b. i.) He was liberal in lending MSS., and thus several of them were lost. He applied himself also to the diplomatic history of the dark ages. He also mentioned this in his 'Epistolae Semilibes,' and he assembled his MSS. on this subject. He was fond of acquiring military information from authentic sources. (Epistolae Semilibes, b. xx., ep. 5.)

In his 'Epistolae Semilibes,' he describes the miserable state of France, and the traces of the devastation perpetrated by fire and sword. He was well received by the king and the queen of England, and returned to Milan. The next year he left Milan to reside at Padua. The introduction into Italy of the mercenary bands, called 'Companies,' which the marquis of Montferrat and other Italian princes adopted, was one of the greatest outrages, and the plague which they brought with them into Lombardy, were the reasons which induced Petrarca to remove to Padua. In 1365, the plague having
reached Padua, he retired to Venice, taking his books with him. Soon after his arrival, he offered to bequeath his library to the church of St. Mark. The offer was accepted, and a large house was assigned for the reception of Petrarca and his books. This was the beginning of the celebrated library of St. Mark, which was afterwards increased by Cardinal Bessarion and others. At Venice, Petrarca was visited by his friend Boccaccio, who spent three months in his company. Petrarca passed several years at Venice, hunting books and the company of his friends, and then and making excursions to Padua, Milan, and Pavia, to visit his friends the Carrara and Galeazzo Visconti. In 1368 he was present at the marriage of Galeazzo's daughter Violante to the Duke of Milan. From Milan he returned to Padua, where he received a pressing invitation from Pope Urban V., who had fixed his residence at Rome, and who wished to become acquainted with him. Petrarca had a great esteem for Urban's character; and he determined, notwithstanding his age and his infirmities, on a journey to Rome; but, on arriving at Ferrara, his strength failed him; he fell into a swan, and remained for thirty hours apparently dead. Nicholas d'Este, lord of Ferrara, and his brother Hugo, took the greatest care of him, and he was restored to life; but the physicians declared that he was unable to proceed to Rome, and he was taken back to Padua in a boat. Petrarca had been long subject to palpitation, and the care of his too great labors and application to study. From Padua he removed, in the summer of 1370, to Arqua, a pleasant village in the Euganean Hills, where he enjoyed a pure air and retirement. He began to write several composed and orphaned things; this is the only residence of the numerous houses which he had at Parma, Padua, Venice, Milan, Vaucluse, and other places, which still remains, and is shown to travellers. In this retirement he resumed his studies with fresh zeal. And he wrote a work on the malum aliorum Ignorantiae, intended as a rebuke to certain Venetian freethinkers who, inflamed with the learning which they had gathered from Averroes' Commentaries on Aristotle, and with the same spirit as a Frenchman who had spread Aristotle's doctrine through Italy, sneered at the Mosaic account of the creation, and at the Scriptures in general. Four of these young men had sought the society of Petrarca while he resided at Venice, and he paid them high honors and esteem; they were a splendid and witty, and fond of study. But this sympathy did not last long. Petrarca had no blind veneration for Aristotle, and still less for Averroes; he was a believer in the Scriptures, and moreover he was attached to his own age and his own time. His friends were skilled, and he used to observe to them that it was of greater importance to investigate the nature of man than that of quadrupeds, birds, and fishes. The four admirers of Aristotle were scandalized at his sentiments, and the poets of the Marcianum, and they had a kind of jury among them to decide upon the true merits of Petrarca. The verdict was, that Petrarca was a good kind of a man, but destitute of real learning. "Bonus vir, sine litteris." This judgment agreed with Venice, and made a great noise. Petrarca at first laughed at it, but his friends took up the business seriously, and urged him to defend himself, which he did in his retirement at Arqua, by the book already noticed. In this work he acknowledges his own ignorance, but at the same time he exposes the ignorance of his antagonist. With regard to Aristotle he says what others have said after him, that 'he was a great and powerful mind, who knew many things, but was ignorant of many more.' His critics, relating to Aristotle, denied the immortality or rather the individuality of the human soul, Petrarca urged his friend Father Maraldi of Florence to refute his tenets. (Epistolae sine Titulo, the last epistle.) But the tenets of Averroes took root at Venice and at Padua, where many professors, down to the time of Leo X., among others Urbano of Bologna, Nicola Vernia, Agostino Niso, Alessandro Achillini, Pomponacio, and others, professed and commanded the works of the Arabian philosopher. It has even been said that Poliziano, Bembo, and others of the distinguished men who gathered around Lorenzo de' Medici and his son Leo X. entertained similar opinions.

The Mount Euganean hills did not prove sufficient to restore Petrarca to health. His physician Dondi told him that his diet was too cold; that he ought not to drink water, nor eat fruit and raw vegetables, nor fast, as he often did. But Petrarca had no faith in medicine. He absolutely wrote four books of invectives against physicians. He valued Dondi, not as a physician but as a philosopher, and he used to tell him so, but Dondi still remained attached to him. The news of Urban V.'s return to Avignon, and of his subsequent death, caused much grief to Petrarca, who had a great esteem for that pontiff. His successor Gregory XI., to whom he was also personally known, wrote to Petrarca, a.d. 1371, a most kind letter inviting him to his court. But Petrarca was unable to move. He was often seized with an inflammation of the eyes, and being advised to go to Francesco Bruni, the Apostolic secretary, that he should not ask the pope for anything, but that if his Holiness chose to bestow on him a living without cure of souls, for he had taken care of his own soul, to make his old age more comfortable, he should feel grateful, though he felt that he was not long for this world, for he was waiting away to a shadow. He was not in want; he kept two horses, and generally five or six amanuenses, though only three at the present moment, because he could find no more. He could have more easily obtained painters than transcribers. Although he would prefer to take his meals alone, or with the village priest, he was generally besieged by a host of visitors or self-invited guests, and he must not behave to them as a miser. He wanted to build a small oratory to the Virgin Mary, but he must sell or pledge his books for the purpose. (F. 433.) Some months after his departure from Florence, Petrarca had visited a friend Matthew, archdeacon of Liège, says, 'I have been in Florence these two years, being given up several times, but still live. I have been for some time at Venice, and now I am at Padua; in a village called Brossano, one of the most happy in having left Venice, on account of this war between the republic and the lord of Padua. At Venice I should have been an object of suspicion, whilst here I am cherished. I spend the greater part of the year in the country; I read, I write, I think, and sometimes I am very happy.'

In September, 1373, peace was made between Venice and Francis of Carrara, lord of Padua. One of the conditions was that the latter should send his son to Venice to receive the living of Carrara, as a faithful vassal to the republic, and the lord of Padua begged Petrarca to accompany his son. Petrarca appeared before the senate, and pronounced a discourse on the occasion, which was much applauded. After his return to Padua, Petrarca had an interview with his friend Francesco da Brossano, who received him as a son and a guest, preferred him in some respects, and in other respects, he was allowed to become an amateur and a lover of the house of Arqua for the summer. On the morning of the 18th of July, one of the servants entered his library and found him sitting motionless, with his head leaning on a book. As he was often for whole hours in that attitude, the people of the house at first took no notice of it, but they soon perceived that his master was quite dead. The news of his death soon reached Padua. Francesco of Carrara, accompanied by all the nobility of Padua, the bishop and chapter, and most of the people of Padua, and even of the city of Venice, were at his disposal. The doctors of the university bore his remains to the parish church of Arqua, where his body was interred in a chapel which Petrarca had built in honour of the Virgin Mary. Francesco da Brossano, his son-in-law, raised him a marble monument supported by four columns; and in 1667 his bust in bronze was placed above it. On one of the columns the following distich was engraved:—

Erat Simolius, arte atque in scientia maxima
Voxque simul ingenii, quae nobis nequaquam.
Padua, in the Episcopalian palace, above the door of the building. It is a fresco painting, which was cut out of the wall of the house of Petrarch at Padua, when it was pulled down in 1881. (Valéry, Voyages Littéraires.) An engraving of it is given at the head of the handson edition of Petrarca's verses by Marsand.

The works of Petrarch are of three kinds: 1, his Italian poetry, chiefly concerning Laura; 2, his Latin poetry; 3, his Latin prose. His Italian poetry, called '1 Canzoniere,' or 'Rime di Petrarca,' consists of above 300 sonnets, about fifty canzonette, and the immense number of letters which he addresses to his beloved. 'Torna a clima d'Amore,' 'Triunfo della Morte,' and 'Triunfo della Fama.' Petrarca's 'Canzoniere' has gone through more than three hundred editions, with and without notes and commentaries. It is next to his letters of a much more personal character, and the character of his poetry is well known. Its greatest charm consists in the sweetness of numbers, 'enraptured by a variety, a rapidity, and a glow which no Italian lyric has ever possessed in an equal degree.

The power of preserving and at the same time of diversifying the rhythm belongs to him alone; his melody is perpetual, and yet never wears the ear. His canzoni (a species of composition partaking of the ode and the elegy, the character and form of which are exclusively Italian) contain stanzas sometimes of twenty lines. He has placed the cadences however in such a manner as to allow the voice to rest at the end of each strophe. This was to preserve the resemblance of the same rhyme and the same musical pauses at intervals sufficiently long to avoid monotony, though sufficiently short to preserve harmony. It is not difficult therefore to give credit to his biographer, Filippo Villani, when he says that Petrarch composed his sonnets in可根据 every possible interval, that even the most grave could not refrain from repeating them. Petrarch poured forth his verses to the sound of his lute, which he kept in his right hand, and his voice was sweet, flexible, and of great compass."

(Foscolo, Essays on Petrarch, 'On the Poetry of Petrarch.') That in Petrarca's sonnets there is too much ornament, that he indulges in rhetorical or riddling phrases, that he often forced, and his hyperboles almost puerile, all this is true; yet there is so much delicacy and truth in his descriptions of the passion of love and of its thousand affecting accessions which he brings before the mind of the reader, that he awakens many associations and recollection in every heart, and this is perhaps the great secret of the charm of his poetry, notwithstanding its perpetual egotism. There is much to choose among his sonnets, many of them, and especially his letters to his friends, have been translated into English, and are far superior to the rest in loftiness of thought and expression. He borrowed little from the Latin poets, and much from the Troubadours; but his finest imitations are those of Dante. Petrarch was a salary of song in the materials in which the Italian language already abounded, and he gave to that language new grace and freshness. No term which he has employed has become obsolete, and all his phrases may be still and are used in the written language.

Far inferior to Dante in invention, depth of thought, and in boldness of imagery, Petrarca is superior to him in softness and melody. Dante was a universal poet; he describes all passions, all actions; Petrarca paints only one passion, but he paints it with intensity. Dante nervea our hearts against adversity and oppression; Petrarca wraps us in soft melancholy, and leads us to indulge in the error of depending upon the affections of others, and his poetry, chaste but cold, affects to be the mirror in which he introduces his own heart, and on the minds of youth. At a more mature age, when man is sobered by experience, Petrarca's poetry produces a soothing effect, and, by its frequent recurrence to the transition of time and to the vanity of human devices, it has no influence on the minds of youth. At a more mature age, when man is sobered by experience, Petrarca's poetry produces a soothing effect, and, by its frequent recurrence to the transition of time and to the vanity of human devices, it has no influence on the minds of youth. At a more mature age, when man is sobered by experience, Petrarca's poetry produces a soothing effect, and, by its frequent recurrence to the transition of time and to the vanity of human devices, it has no influence on the minds of youth.

There are some of his canzoni which soar higher than the rest in their lyric flight, especially the one which begins 'Italia mia,' and which has been often quoted; and another which begins 'Oh! in集群.' In his Stanzas he is permitted more than in his canzoni, but he is not permitted the height of his canzoni. His beautiful canzone, or 'Ode to the Virgin,' with which he closes his poem about Laura, is also greatly admired for its sublimity and pathos.

The Latin poetry consists, 1, of the 'Africa,' an epic on the exploits of Scipio bar Aquila, or 'Roman and Punie war, a dull sort of poem, with some fine passages; it was however much admired at the time; 2, Epistles, in verse, addressed to several popes, for the purpose of urging their return to Rome, and also to several friends; 3, Eclogues or Boclasses, which are acknowledged by himself to be allegorical, and were, in fact, like Boccaccio's eclogues, satires against the powerful of his time, and especially against the Papal court of Avignon.

Gignons, in his 'Histoire Littéraire,' and others, have endeavored to find the key to these allegories. The sixth and seventh eclogues are evidently directed against Clement VI, and the twelfth, entitled 'Confiscatio,' has also some violent invective against the Papal court. This circumstance has been made use of by the enemies of Petrarch, to prove that he was a heretic, an enemy of the church of Rome, belonging to some supposed secret society. We know from Petrarch's own letters, especially those styled 'sine titlo,' that he spoke very freely of the disorders and vices of the Papal court, which, when he called them the 'tigerine and Babylon of the east. He says that Jesus Christ was sold every day for gold, and that his temple was made a den of thieves; but we also evidently see that in all these invectives he spoke of the discipline of the Church, or rather of the abuses of that discipline, and not of the dogmas, things which have been often confounded, both by the advocates and the enemies of Rome. Petrarch, like many other observing men of that and the succeeding century, could not be blind to the enormous abuses existing in the Church; but their indignation was poured out against the individuals who fostered those abuses, and they never thought of attacking the fabric itself in which they were enmeshed. 'I wish to be in that country secret unbelievers and scoffers at revelation, but there were no heretics. There were many who openly charged the pope and his court with heinous crimes, but who at the same time felt a sort of loathing at the very name of heresy. Petrarch's purpose was that thepnay of the Church should be restored, and the vainglory for the authority of the Church, the persuasion of its infallibility, remained, although divested of all devotion, of all enthusiasm, of all respect even for the person of the head of the Church. Petrarch was not a man of extremes: his dislike of the Papal court of Avignon originated in two feelings, one of honest indignation against its corruptions, and another of sentimental or patriotic interest. The former made him urge with all his powers of persuasion the return of the head of the Church to a residence in that city. When he spoke of Babylon, he alluded to the captivity of the Jews, to which he compared the residence of the popes at Avignon. Of the popes Urban VI. and Gregory XI, he speaks in his letters with great respect and personal attachment. He went to Rome expressly to attend the jubilee of 1336, and, as he states in his Epistles to Marsan, he was extremely desirous of obtaining the plenary indulgence, and 'with a firm resolve of putting an end to his career of sin.' He had an accident on the road, which made him lame, and which he supposed for his life. He went to Rome in the year of its jubilee, and he afterwards received the pope's blessing, and went back to Avignon. After having visited the churches and performed his devotions, he wrote that 'he had now become free from the plague of unceasing thoughts which had tormented him till then, and that in looking back to his past life, he shuddered with shame.' (Epistles to Marsas, v. 1.) So much for those who would persuade us that Petrarca was a susciciated heretic. His hostility was personal and pernicious; it was directed against Avignon, and not against Rome; against the corrupt dignitaries of the church, not against the Church itself. Petrarca however, although religiously disposed, was far from superstitious. He was one of the most enlightened men of his time, and yet, strange to say, a cardinal had nearly persuaded Pope Innocent VI. that he was a magician, because he was familiar with strange books, a very serious charge in those days. Petrarca's poetry is the outcome of his learning and study, his thought of turning motto, is a lasting monument of sound religion and good sense.

The Latin Epistles of Petrarca are the most important ofall his works, and the one on which his fame principally rests. His Letters are addressed to two or three letters to James Colonna, the autographs of which are now in the possession of Lord Holland, and which show that he was not much in the habit of corresponding in that language. Petrarca's Epistles are suffused with authority, and written in a stately and seraphic style, which make them the most noble and the most enlightening travel of modern Europe; he was
an eye-witness of many important events; he corresponded with kings, emperors, popes, statesmen, and men of learning. His Letters have not been sufficiently noticed by historians: many of them are missing in various libraries, and some of them are known to us only in manuscript order. Those which have been published are as follows:—1, "Epistolae de Rebus Familiares," in viii. books; 2, "De Rebus Sensibus," written in Petrarch's old age, in xvi. books; 3, "Ad Vitam Solitariam," after the death of him and his illustrious contemporaries; these epistles are addressed to various historical characters of antiquity; 4, one book "Variarum Epistolorum;" 5, one book "Epistolae sine Titulo." To this last book Petrarch had prefixed a curious preface, in which he says, that, with all knowing, he was to be obdious to the world, especially in times of corruption, he had taken the precaution of writing the Buolices in an ambiguous kind of style, in order that their real sense might be understood only by the few, and that a similar consideration he now has collected in one separate book certain letters written to several friends at various times and upon different occasions, in order that they might not be scattered through the body of his correspondence, and be in the means of the whole condemned. Those who wished to read them would thus know where to find them, and those who thought that they ought to be suppressed, might exclude them from the rest of the collection.

Petrarch of Milan, had composed out of the Epistles of Petrarch a work descriptive of the manners and history of his age, in which he gives copious extracts translated into Italian:—Viaggi di Francesco Petrarcha in Francia, in Governmente, 4 vols. 1830. This work was severely criticized in the Biblioteca Italiana, vol. xxiii. and xxiv. It is however an entertaining book, containing considerable information concerning Petrarch and his times which is not collected in any other work. Professor Meneghelli, of Padus, published in 1818, "Index F. Petrarchi Epistolae quae edite sunt, et quae adhuc ineditae;" but his list, as he himself admits, is not complete. Donenico de Rossetti, of Trieste, has published a bibliographical and critical work of the Laridae and the Laridae of various sources, commentaries, &c., and he has also edited a biography of Petrarch by his friend Boccaccio. "Serie cronologica di edizioni delle Opere di Petrarcha," Trieste, 1834. The prose works of Petrarch, besides those already mentioned, are:—1, De Remediis utrisque Fortunae, libri ii.; 2, De Vita Solitarii, lib. ii.; 3, De Otto Religiosorum, lib. ii.; 4, Apologia contra Gallum; 5, De Officio et Virtutibus Imperatoris; 6, Rerum Memorandarum, libri iv. In this work, in which he has imitated Valerius Maximus, without however borrowing from him, Petrarch quotes a vast number of facts from antient and modern history, each illustrating or exemplifying a moral principle of his own; in fact a treatise of practical ethics. 7, De veri Sapientiae, being dialogues between a sophist and an uneducated man. 8, De Contemptu Mundi, being imaginary dialogues between St. Augustine and Petrarch. He alludes in these works to the Latin fathers attentively. 9, Vita Viorum Illustrium Epitome. Another and ampler work of Petrarch under the same title, of which the one just mentioned is only an abridgment, has remained inedite, but an imperfect Italian translation, by Donato degli Albanzoni, was published at Venice, in 1597. (D. de Rossetti, Petrarchi, Giulio Caleo, e Boccaccio, Illustrazione Bibliographica, Trieste, 1928.) 10, De Vita Beata. 11, De Obedienciat ac Ede Bona, 'h e Rerum Syracusan. 12, Several orations, De Avariati vitanda, De Libertate capescendae, &c. Of his Latin style the following judgment is given by an Italian scholar:—"In modelling his style upon the Roman writers, he was the first to neglect entirely the Church, whose phraseology was more appropriate to his subjects; and the public affairs being, at that period, transacted in Latin, he could not always reject many of those expressions which were originating from barbarous ages, had been sanctioned by the use of the greatest of the universities, and were the more intelligible to his readers. In sacrificing gravity he gained freedom, fluency, and warmth; and his prose, though not a model for imitation, is beyond the reach of imitation, because it is one of his own. (Foscolo 'On the Poetry of Petrarch.') Petrarcha's Opera Omnia were published at Basle, in 1581, 2 vols. folio. Biographies of Petrarch have been written by Villani, Vergerius, Arzetius, and many others; the best are—Baldelli: Dei Petrarcha e delle sue Opere, 2 vols. 8vo.; —Memories pour la Vie de Petrarche, avec des Piéces justificatives," 3 vols. 4to, Amsterdam, 1746; Foscolo, 'Essays on Petrarch.'

PETRELS, the English name for the Procellariidae, a family of marine birds belonging to the seabirds far from the land, and with which his superstition was once more busy than it is now; but even at the present day they are not unfrequently regarded as ominous, and many a mariner has been売 upon Mother Carey's Chickens as the harbinger of a storm.

Though zoologists have differed as to the genera to be included in this extraordinary group, they have been pretty well agreed as to the forms which should be congregated under the name of Procellariidae.

The genus Procellaria of Linnaeus was formed by that great zoologist for the Petrels, and it is closely followed by his genus Diomedea (Albatrosses), between which and the Petrels there are many points of resemblance both in their structure and their pelagic habits. In the article Laridae, to which family so many ornithologists have referred the Petrels, will be found the opinions of most of the leading writers who had then written upon the subject.

The Prince of Musignano (Geographical and Comparative List, 1838) makes the Procellariidae the thirty-fourth family of the birds, and places them between the Laridae and the Colymbidae. The Prince's Procellaridae (European and American only) consist of the genera Diomedea, Procellaria, Puffinus, and Thalassidroma.

Mr. G. R. Gray (List of the Genera of Birds, 1840) makes the Procellariidae consist of the genera Diomedea, Puffinus, and Procellaria.

Mr. Temminck, in his 'Manuel' (2nd part, 1820), arranges all the Petrels under the generic name Procellaria, Linna., but divides them into the following sections—

1. Petrel proper so called.
   Procellaria glactalis.
2. Procellaria Puffinus, Anglorum, and obesus.

Procellaridae. (Larodê.)

This is the genus Halodroma of Illiger, and the genus Puffinaria of Lesson.

The author of the former genus states that his reason for changing the generic name of the only species which serves as the type of this genus is the uncertainty in which he finds himself, as to what is really the genus Puffinariae of Larodê, Puffinaria of Illiger. Some strong shades of difference, he observes, appear to exist between the two genera, which are given by these authors and those which he cites, and he further says that he has seen nothing of the small membranous and dilatible pouch, which ought to exist under the lower mandible. The sole species above alluded to be recorded as Puffinaria Garnoti, Less. (Zool. de la Coq, p. 46; Procellaria urinatrix, Gmel.)

Mr. G. R. Gray gives Procellaria, Gm., Halodroma, Ill., Puffinaria, Less., as synonyms of Puffinariae; and refers, without a query, to P. Urinatrix, Gm. (Forst., Draue, t. 86—from which our cut is taken) as the species.

Generic Character.—Bill enlarged, composed of many pieces soldered together, the edges smooth and re-entering: the upper demii-bill composed of two pieces, furnished with feathers at the base up to the nostrils, which are very open, forming an oval circle, the aperture of which is above, separated one from the other by a simple internal partition; this partition supports a slight ledge which divides each nasal fossa in half; the enlarged portion of the upper demii-bill goes beyond the lower mandible, and terminates at the contraction of the bill, which is narrow, convex, very much curved, and very robust. The lower mandible is formed for equally two soldered pieces; that of the edge of the narrow, inserted in the upper demi-bill; that below is formed by

* The article in Larter, vol. xii, p. 333, right-hand column, line 35 from the top, "for Hortulinales, read "Hortulinales."

* See post, p. 46.
two branches, slightly convex, separated outwards, where the space is filled by a very small and rather indistinct naked skin; the extremity of the mandible is convex on the edges, concave below, and sharp. First and second quills, which are the longest, equal; third and fourth rather shorter. Tarsi small, nearly equal, pointed, formed of twelve feathers. Tarsis moderate, weak, furnished with small areolated scutellum; three anterior toes enveloped in an entire membrane; hind toe (third) much less.

M. Garnot describes the sole species above noticed, as follows:—Size of the Blue Petrel, from the extremity of the bill to the tail, 8½ inches. The plumage has no brilliancy; a blackish-brown on the upper part of the back glazed with a slight tint of brown; the under parts of the body are the two colours which it presents. Beneath the wings, as well as on the sides, the hue is greyish-white.

The head approaches, a little, that of the Pelagic Petrel; the bill is-articulated and hooked like that of the Puffins, but differs from that genus in the aperture of the nostrils, which is turned upwards in the form of a heart on a playing card; a partition separates the two nasal conduits; the colour is black; the palmed feet, which want the hind-toe, are of the same colour, and are placed very near the tail, which is intermediate between that of the Petrels and the Grebes. The eye, which is situated a little above the level of the commissure of the mandibles, has the iris of a red-brown. Total length 8 inches 6 lines.

M. Garnot further describes the tongue as elongated, thick, and dentilated on its edges; the stomach large and occasionally filled with a quantity of sand, and if the animal be killed in the sea, the form of the body of the mandibles, has the iris of a red-brown. Total length 8 inches 6 lines. M. Garnot further describes the tongue as elongated, thick, and dentilated on its edges; the stomach large and occasionally filled with a quantity of sand, and if the animal be killed in the sea, the form of the body of the mandibles, has the iris of a red-brown. Total length 8 inches 6 lines.

Locality and Habits.—This species is found in great flocks along the coast of Peru, flying moderately well in a precipitous manner, and skimming the sea, but it prefers to rest upon the surface, and dives very frequently, like the Grebes, doubtless for the purpose of capturing the small fish which form its food. M. Garnot thinks that it is intermediate between the Petrels, which lay their eggs and feed it very nearly in the same manner as the Grebes, whose port and habit of diving it has; and hence he proposes for it the name of Grebe-Petrel. The parts between Sangall and Lima are the localities mentioned by M. Garnot.

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Pelecanoides Urinatrix.

Mr. Darwin notices Puffinus Britonii as one more example of those curious cases of a bird evidently belonging to one well-marked family, yet both in its habits and structure allied to a very distinct tribe. 'This bird never leaves the quiet inland sounds,' says Mr. Darwin; 'when disturbed, it dives to a distance, and on coming to the surface with the same movement takes wing. After flying for a space in a direct course, by the rapid movement of its short wings, it drops as if struck dead, and then dives again. The form of the beak and nostrils, length of foot, and even colouring of the plumage, show that this bird is a P.

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*Stromwarden*

*Uccello*  
*Procellaria*  

*Bill* shorter than the head, much compressed in front of the nasal sheath, with the tip of the upper mandible suddenly curving and hooking downward, and that of the lower one slightly angulated and following the curve of the upper. *Nostrils* contained in one tube or sheath, but showing two distinct orifices in front. *Wings* long and acuminate, with the first quill shorter than the third, the second being the longest. *Tail* square or slightly forked. *Legs* having the tarsi rather long and slender, reticulated. *Feet* of three toes united by a membrane; hind toe represented by a small straightdependent nail. (Gould.)

The group generically subdivided as above, or rather the most of them, have been regarded as the indicators of storm and tempest. Rapidly spinning the billows as they skim along the undulating waves, they are ever on the watch for what the troubled water may offer to them, and they congregate in the wake of the sea-going ship not so much perhaps for shelter as for what is turned up from the furrow ploughed by the keel. Mr. G. Bennett, during his voyage, observed that the Cape Petrels, Albatrosses, and other birds followed the ship during the whole of the night, reposing for a short period on the water, but seldom remaining long on its waves. They usually alighted for food, and soon resumed their flight. Marked birds were seen about the ship for days together when the strong gales carried the vessel at a rapid rate through the water. Cape Petrels and Albatrosses were seen flying near the stern as late as midnight, and it was not unusual to hear the twittering note of the Stormy Petrel (*Thalassidroma pelagica*) under the stern during the night. (*Wanderings in New South Wales*, vol. i.)

**Daption**

Example, *Daption Capensis*, Stephens; *Procellaria Capensis*, Linn.; *Cape Pigeon* of the English; *Pentida* of the Portuguese.

**Description.** — Plumage variegated with brown and white. The total length of one measured by M. Lesson was thirteen inches, that of the tube of the nostril six lines. The testicles were rather deep grey, the larynx had two muscles proper to it, and the total length of the intestinal tube was 47 inches. M. Garnot communicated to M. Lesson a species which he believed to be new, with an elaborate description and anatomical details, which M. Lesson quotes at length.

Captain P. P. King, in a letter to Mr. Broderip from New South Wales (April, 1834), states that from the meridian of the island of St. Paul's, on about the parallel of 40° S. lat., the ship was daily surrounded by a multitude of oceanic birds. Of the Petrel tribe, the *Cape Pigeon, Procellaria Capensis*, Linn., was most abundant; but *Proc. vittata* (vol. currals) — *Prion* — frequently was observed; as also a small black Petrel which Captain King did not recollect to have before seen. (Zool. Proc., 1834.) The same author states that the *Pintado Petrel* (the species now under consideration), seems to be spread over the whole of the southern hemisphere. (*Zool. Journ.,* vol. iv.)

**Thalassidroma.** (Vigors.)

This is the genus *Hydrobates* of Boie. Mr. Selby remarks that the members of this genus, which are all of small size, have been very properly separated by Mr. Vigors from the rest of the Petrel group. They are, he observes, birds of nocturnal or crepuscular habits, and are seldom seen except in lowering weather, or during storms, when they frequently fly in the track of ships. At other times, and in clear weather, they remain concealed during the day in the holes of rocks, rat-burrows, &c., and only come forth at midnight in search of food, consisting of marine crustaceans, sea-slime, mollusks, and other oily animal matter which they find floating on the surface of the water. The flight is much in a quizzing manner, and makes a peculiar sound. They resemble in size, color, and general appearance, all the known species of a dark hue, more or less relieved with white, and are widely distributed, some being in both hemispheres, and in a variety of climate. They breed in the crevices of rocks, caverns, &c., and, like the *Pulmars* and *Shearwaters*, lay but one egg, which is white, and comparatively large. (*Illustrations of British Ornithology*, vol. ii.)

**Examples.** — *Thalassidroma pelagica*, and *Thalassidroma Wilsonii.*

**Description of Thalassidroma pelagica.** — Head, back, wings, and tail dull black; lower parts sooty black; a large transverse band of pure white on the rump; scapulars and secondary quills terminated with white; tail and quills black, the first quill not the longest, but shorter than the other three, second and third, which is the longest; bill and feet black; iris brown. The tail is square, and the tips of the wings reach but very little beyond its point. The length of the tarsi is ten lines. Total length five inches six lines. (Male and female.)

**Young of the Year.** — They have the tints less deep, and the edges of the feathers sooty or rusty: in other respects they resemble the adults.

**Locality.** — More common in North America than in Europe; found on the coasts of England and Scotland; rather common at the Oredt and Hebrides; more abundant in the island of Saint Kilda; wanders rarely on the coasts of the ocean, and very occasionally on the land of the centre of Europe. (Temminck.) Mr. Selby states that they are found upon the seas surrounding Britain at all seasons of the year, and that they have been ascertained to breed not only upon the Shetland and other northern islands of Scotland, but upon the rocky coast of the north-west of Cornwall at the opposite extremity of the kingdom. The geographical distribution of this species has, he adds, been supposed to be very extensive, but the discovery of other species very closely allied to it both in size and color (and only to be distinguished by narrow inspection and comparison) in various parts of the Atlantic and Pacific Oceans, makes it more than probable that these latter have been mistaken for it, and that its distribution is much more limited, being in all likelihood confined to the European seas.

The bird above described, which is considered to be the smallest of the web-footed birds, is the Proc. of the *List of the Birds of Linnaeus*; *Uccello delle Tempete* of the modern Italians; *Oiseau de Tempête*, *Pöel*, and *Pöel Tempète* of the French and Temminck; *Ungesseler Vogel, Kleinsten Stormvogel*, &c., of the Dutch. *Zwals van de Nederlanders; Stormväder Vogel* of the Swedes; *Sören Peder, St. Peders Fugl, Vesten-vinds* and *Soden-vinds Fugl*, and *Uvrepers Fugl* of the Norwegians; *Gan-gan Longere* of the ancient Britons; *Common Storm Petrel*, *Stormy Petrel*, and *Storm-fark* of the modern
British, who call the species also (provincially) Little Petrel, Mitty, Assing, Spence, Sea-swallow, Allamouth, Witch, and (mariners especially) Mother Carey's Chickens, a title which is not confined to Procellaria pelagica, but is shared by and generally applied to the more oceanic species, such as Thalassidroma Wilsonii, &c.

This, or some other species of Thalassidroma, is in all probability the Cypselus of Pinny, who describes (Nat. Hist., x. 39) the same bird as his Cypselus shot while fishing in rocks, their wide spread over the sea, and says that however far ships go from land, these birds fly around them.

Habits. Food, Reproduction, &c.—The habits of this species much resemble those of the other Petrels. Mr. Selby remarks that most authors state that it lays but one egg, which M. Temminck describes as being pure white, nearly round, and of the shape of an owl's. Mr. Selby believes that a single egg is the general law, but he refers to Mr. Scarth's paper in the 'Linnean Transactions' (xii.).

The latter gentleman found a nest in passing over a track of peat-moss near the shore upon an uninhabited islet in Orkney. He was directed to it by the low purring noise of the female, and found two pure white eggs, of a very large size as compared to the bird. Upon seizing the old one, she squirted out a very rancid oil substance. Upon taking both, he carried them to a cage and worms and offered her, all of which she refused. At the end of four days, Mr. Scarth saw that she occasionally drew the feathers of her breast single across or rather through her bill, and appeared to suck such oil substance from them. Upon this, he repeated the experiment with tenant, which had sucked it, he repeated the smearing twice or thrice a day for a week. He then placed a saucer containing oil in the cage, in which she regularly dipped her breast, and sucked up all offered to her, and continued doing so for three months. Mr. Selby observes that some authors have stated that the young, as soon as hatched, are conducted to the water; but this he says is a mistake, as they remain in the boxes till they are able to fly, which takes place three weeks, and during this time they are fed by the parents with oily matter ejected from their stomachs. 'Instances,' continues Mr. Selby, 'frequently occur of its being forced rather than inclined, either dead or in an exhausted and dying state; but the cause of such mortality has not hitherto been satisfactorily accounted for; it may however arise from weakness, occasioned either by old age or accidental illness, rather than to cold, harsh winds, storms, and wintry blasts, during which period such instances are most frequent; and this is rendered more probable by its being commonly in an emaciated condition. The flight of the Storm-Petrel is remarkably swift, and is equalled by few others. It is quick as if on water, and its wave to wave, at intervals dipping its bill into the water as if in search of insects, or picking up food, during which it will stand as it were upon the summit of the billow with which it is tossed, but not for the purpose of sight for swimming, and is totally unable to dive, a faculty attributed to it in an eminent degree by some of the earlier writers.' In December, 1823, whilst sailing on the Thames, we saw one of these birds in the middle of the river, just below the Tower of London. It was disporting on the wing just above the surface of the water, which was very rough, and ever and anon settled on it, rising again almost immediately. It had blown down a gale (which still continued when the bird was seen) for twenty-four hours. Many persons were unsuccessful in pursuit of it, they being apparently unacquainted with its habits, and taking it for a straggle and wandering land-bird which was continually dropping into the water.

M. Temminck (Manuel, 4th part) observes that M. Graba presumes that the mould of this species is double, and that in many cases the plumage has some obscure spots. M. Temminck further remarks that M. Graba differs from that found accidentally on his coasts in the want of the white on the scapulars and secondaries of the wings; in other respects there is no marked disparity. This is the Hesperoscoerus of Burman, and is in all probability that alluded to by Brunnich, when he tells us that the inhabitants of the Feroe Isles make the bird serve as a candle, by drawing a wick through the mouth and rump, which being lighted, is fed by the fat and oil of the body.

### Thalassidroma Wilsonii.—Description.—Head and all the lower parts sooty black; back, scapulars, and wings black; some of the great wing-coverts bordered with white; all the upper tail-coverts, and, in some individuals, a part of the feathers of the thighs also or of the lower covertes, pure white; tail nearly square, only slightly emargurate, the three lateral feathers white at their base; wings exceeding the tail more than an inch; bill and feet (tarsi 3 lines long) black; under side of wing and the under tail-coverts finely bordered with that colour; iris black; extremity of the naortal tube turned up. Total length of the bird 6 inches or 4 lines. (Both sexes in perfect plumage.)

M. Temminck, who gives this species, doubts that the very large numbers doubtless differ but little from the adults; but they are not as yet exactly known. (Manuel, 4th part, 1840.)

This species appears to be the Procellaria pelagica of Wilson; Procellaria carinata of Banks; Procellaria Wil- sonii of the Prince of Musignano; L'Oiseau Temple of Buffon, 'Enl.' 993; and Petrel échasse of Temminck.

Localities.—The whole of America to Cape Horn; common on the coasts of Chili, the United States, and Brazil; more rare at the Cape of Good Hope than Procellaria pelagica; shows itself accidently on the coasts of Spain and in the Mediterranean. (Temminck, Manuel, 4th part.)

Habits, Food, Reproduction, &c.—The habits of this species come near to that of Stormy Petrels. Devil's Birds, and Mother Carey's Chickens with remonstrances, well describes their habits. 'On the edge of soundings, as the vessel's loses sight of the hawndals, flocks of these birds, swift flying about her, sometimes seize on the men around the vessel, and finally take their station in her framee for water. In this situation, as humble dependents, they follow for their pittance of fare, constantly and keenly watching the men seated or standing on deck, or walking about near the edge of the vessel, till they are satisfied; and if the man is accighted with any fat kind of animal matter thrown overhead, which they instantly discover, however small the morsel, or mountainious and foaming the raging wave on which it may have fallen, it happens to those who stop in their airy and swallow-like flight, and whirl instantly down to the water. Sometimes nine or ten thus crowd together like a flock of chickens scrambling for the same kernel, as in the same time pattering on the water with their feet, as if walking on the surface, they balance themselves with gently flutting and outward wings, and often dip down their heads to collect the sinking object in pursuit. On other occasions, if seeking relief from their almost perpetual exercise of flight, they jerk and hop widely over the water, rebounding as their feet touch the surface with great agility and alacrity. There is something cheerful and amusing in the sight of these little voyaging flocks, and the cackling, and cheering with their wings, unconcerned across the dreary ocean. During a gale it is truly interesting to witness their intrepidity and address. Unappalled by the storm that strikes terror into the breast of the man that is at variance with the elements, they still fly over the waves, descending their sides, then mounting with the breaking surge which threatens to burst over their heads, sweeping through the hollow waves as in a sheltered valley, and again mounting with the rising billow, they trip and jerk sportively and securely on the roughest sea, defying the horrors of the storm, and like magic beings seem to take delight in braving overwhelming dangers. At other times we see these seamen make a gayly courting from side to side in the wake of the ship, making excursions far and wide on every side, now in advance, then far behind, returning again to the vessel as if she were stationary, though moving at the most rapid rate. A little after dark they generally cease their arduous course, and take their interrupted rest upon the water, arriving in the wake of the vessel they had left, as I have observed, by about 9 or 10 o'clock of the following morning. In this way we were followed by these little flocks of Petrels or Stormy Petrels, as they are termed in the Azores, and until we came in sight of the Isle of Flores.' (Manual of the ornithology of the United States and of Canada.)

Temminck states that their food consists of the seeds of Sclerotinia, among other smaller objects. (Manuel, &c.; Wilson says that they feed on the gelatinous spora of the Gulf-weed (Fucus natans), as well as fish, barnacles, &c. Nuttall informs us that these Petrels breed in great numbers on the rocky shore of Bermuda islands, and along some parts of the coast of East Florida and Cuba. Mr. Audubon informed him that they
This is the Procellaria glacialis of Linnaeus and authors; Le Pérel Palmar and Pérel de l'Ile de Saint Kilda of Buffon; Hen-keet of the Norwegians, by whom it appears to be also called Mallemoke or Mallemuhs; Glaetly Glaig of the ancient British; Fulmar and Fulmar Pérel of the modern British, by whom it is also named (provincially) Mallemoke, Malmoke, and Mallduck.

Localities.—The Polar regions principally during summer. It is noted by Major Sabine as occurring within the Arctic Circle (Parry's First Voy., Append.), and as abundant at all times in Davis's Straits and Baffin's Bay; in his Greenland Birds the same author states that during the time of the detention of the ships in ice in Jacob's Bay (lat. 71°), from the 24th of June to the 3rd of July, Fulmars were passing in a continual stream to the northward, in numbers inferior only to the flocks of the Passenger Pigeon in North America. Captain James Ross (Append. to Sir John Ross's Second Voy.) records it as abundant in most parts of the North Atlantic Ocean, but as peculiarly numerous in Hudson's Bay, Davis's Strait, and Baffin's Bay. He says that these birds are also occasionally met with to the westward of Lancaster Sound, and in Regent's Inlet, following the whale ships, and avail themselves of the success of the fishermen, by feeding off the carcass of the whale after it has been deprived of its blubber and turned ashrift. Temminck places the species always on the shelves and floating ice of the pole, and says that it is very accidental on the coasts of England and Holland; but that the seas of the Arctic Pole are covered with it at great distances from land. Mr. Selby (Illustrations of Brit. Ornith.) informs us that the steep and rocky St. Kilda, one of the western islands of Scotland, is the only locality within the British dominions annually resorted to by the Fulmar, the rest of the Scottish and our more southern coasts being rarely visited even by stragglers. Mr. Gould (Birds of Europe) observes, that although the Polar regions constitute its native locality, it is nevertheless found, but in much less abundance, in more temperate climates, such as the northern seas of Europe and America, extending itself throughout the lengthened coast of Norway, and not unfrequently Holland and France. It frequents also, he adds, the northern isles of Great Britain, resorting to the Orkneys and Hebrides for the purpose of breeding, but particularly to the island of St. Kilda.

Habits; Food; Reproduction; Utility to Man.—Temminck states that the Fulmar never comes to the coast except for the purposes of nesting, or when driven there by gales. Its flight is easy and buoyant. Besides the flesh and blubber of dead whales or seals, for penetrating whose thick skins their tranchant and hooked upper mandible is admirably formed, barnacles and other parasites which attach themselves to the whales, mollusks, &c., form their food. Captain James Ross (loc. cit.) says that the bird is of essential service to those employed in the capture of the

trate, But both Hay and Willughby (to say nothing of other parts of their descriptions) describe the bill of their bird as black, which appears not to be the colour of that of Palmarus glacialis, either in the young or the adult state. Willughby's figure (t. 66), though not a good one, can hardly be taken for a Fulmar; the nostrils are not presented as tubular, nor the bill itself as large; and there is nothing to lead the observer to suppose that the figure was intended for that bird. Mr. Selby quotes the figure and description of Willughby as referrible to Larus argentatus of Brunnich.

Example, Palmarus glacialis.

This species has been considered the type of the restricted genus Procellaria, Lin., by those who confine the subvision of that genus to the genera Procellaria, Puffinus, and Thalassidroma. The bill of the Fulmar is stout, thick, with the upper mandible considerably hooked at the tip (where it is also dilated and sulcated. The lower mandible is straight and slightly truncated. The nostrils are united in a single tube. The legs are moderate, and a sharp claw exists in the place of a hind toe.

Description.—Head, neck, all the lower parts, rump, and tail pure white; back, scapulare, wing-coverts and secondaries pure bluish-ash; quills bright grey brown; tail well rounded, conical; bill bright yellow tinged with orange on the nasal tube; iris and feet yellow. Length 16 inches. (Both sexes, summer plumage.)

Young of the Year.—The whole body bright grey clouded with brown; feathers of the wings and tail terminated by a deeper brown; the quills and caudal feathers have only a tinge of grey brown; in front of the eyes an angular black spot; bill and feet yellowish brown. (Temminck.)
whale, by guiding them to those places where the whales are most numerous, and by giving notice of the first appearance of those animals at the surface of the water, by crowding to the spot from all quarters. The Fulmar also attends the fishing-vessels on the banks of Newfoundland, where it is called John Down, for the scoff of the cod-fish, and is often taken with a hook baited with a piece of cod's liver or flesh. At St. Kilda they breed gregariously in the caverns and holes of the rocks; a single white large egg, with a very brittle shell, is deposited by the female, and the young, which are hazed about the middle of June, are fed with oily matter disgorged by the parents. As soon as they are fledged they are eagerly sought by the cromegans, who scale the precipitous cliffs for them at the risk of their lives, for the sake of their down, feathers, and oil. 'No bird,' says Pennant, 'is of such use to the islanders as this; the Fulmar supplies them with oil for their lamps, down for their beds, a delicacy for their tables, a balm for their wounds, and a medicine for their distempers. The Fulmar is also a certain prognosticator of the change of wind; if it comes to land, no west wind is expected for some time; and the contrary when it returns and keeps the sea.' These birds are said to be salved for winter provision by the inhabitants of Baffin's and Hudson's Bay. Like the other Petrels, the Fulmars eject oil through their nostrils in self-defence, and it therefore becomes, as Mr. Selby observes, an essential point that they should be taken and killed by surprise, in order to prevent the loss of a liquid so valuable to those who capture them.

**Pulmaria:**

**Pulmaria glacialis.**

The type of this genus, as restricted by Mr. G. R. Gray, is *Pulmaria Biquinocellata*, Linn.; *The Great Black Petrel of Edwards.*

Mr. Darwin, in his valuable 'Journal and Remarks' (Voy. of Adventure and Beagle), remarks that the southern seas visited by the expedition are frequented by several species of Petrels. The largest kind, *Procellaria gigantea,* or Nelly (Quebrantahuecos, or Break-bones, of the Spaniards), is, he observes, a common bird, both in the inland channels and on the open sea. According to Mr. D'Acunha, 'it is habits and manner of flight *continues* Mr. Darwin, 'there is a very close resemblance with the Albatross, and as with the latter bird a person may watch it for hours together without seeing on what it feeds, so it is with this petrel. The Break-bones is however a rapacious bird, for it was observed by some of them, that the ship received them at Port S. Antonio chasing a diver. The bird tried to escape, both by diving and flying, but it was continually struck down, and at last killed by a blow on its head. At Port St. Julian and the islands last petrels were seen and chasing young gulls.' The same author adds that the Spaniards were probably aware of the rapacity of this petrel, for 'Quebrantahuecos' means properly an espy. These large petrels are called Mother Carey's Geese by the sailors.

**Diomedeae.** *(Linn.)* [**Albatross.**]

Captain P. P. King, R. N., in his letter to Mr. Broderip above alluded to, says, 'Of the genus Diomedeae the species which I regarded as the *D. spadicea, chlororhynchos,* and *fuliginaea* of authors, were the most remarkable. Near Tristan d'Acunha the first (*D. spadicea*) most abounded; between the Cape and the longitude of 36° east, the second (*D. chlororhynchos*) was most rare; and to the north of St. Paul's their place was supplied by *D. fuliginaea.* Where one species abounded, the others were only occasionally seen; from which it may be inferred that each species breeds in distinct haunts. Occasionally two or three varieties of the *D. exulans*, Linn., the large wandering Albatross, attended the ship, but they rarely remained beyond the day. *D. exulans* varies very much in plumage; generally however the head, neck, back, and wings more or less mottled-grey, and the breast, abdomen, vent, and uppopygium snowy white; the bill is horn-coloured, and the feet yellow. We saw a bird that might be referred to M. Lesson's *D. epomophora,* if that is really a distinct species. Another, of very large size, was near us for two days, which, with the exception of the back of the wings and tips of the under side of the pen feathers and extremity of the tail being whitish, was of a snowy white colour.'

Drawings of *D. spadicea* and *D. chlororhynchos,* and descriptions of three of the species sent by Captain King, were read and exhibited. The descriptions agreed essentially with those from the same specimens in 'Wanderings in New South Wales,' by G. Bennett, who was a fellow-voyager with Captain King. The Report goes on to state that the reference of these to the species quoted is provisional only, as they differ in some important particulars from the original description of those species; it is therefore probable that they are rather to be viewed as indicating races hitherto unknown to zoologists. (Zool. Proc., 1841.)

The author of the 'Wanderings' above noticed states that the known species are: *D. exulans, D. spadicea, D. chlororhynchos, D. fuliginaea,* and also, as enumerated by Cuvier, *D. brachyura* (Tem.,) and *D. melanophris* (Tem.); to these two last Mr. Bennett had no opportunity of referring. He gives a description of a species found at Beart's Straits, among others, and has a chapter containing much interesting observation on the habits of the Albatrosses and the mode of capturing them. They appear to be unapparing in their voracity, for Mr. Bennett saw one which was shot dead instantly fallen upon by its companions, eager to make it their prey. The excretory duct of the nasal gland of the wandering Albatross (*D. exulans*) was traced by Mr. Bennett for nearly two inches under the external plate of the upper mandible, in a direction towards the nostrils, but inclining slightly upwards, until he last sight of it among the cellular substance of the bone.

**Habits, Reproduction, &c.—** Captain Carmichael (Linn. Trans., vol. xii.) gives an account of the breeding of these birds, from personal observation, in the island of Tristan d'Acunha. As he and his party walked down the mountain on their return, they passed among flocks of Albatrosses engaged in the process of incubation or tending their young. Four species (*Diomeidae spadicea, exulans, chlororhynchos,* and *fuliginae*) breed on the island; none of them hatch more than one egg at a time. The two former give themselves up, in constructing their nests, merely choosing a dry spot of ground, and giving it a slight concavity, to prevent the egg from rolling out of its place.
PETROCIOLA. [LITHOPHAGIDE, vol. xiv., p. 48.]

PETRIFICATION: One of the general terms by which naturalists have at different times sought to designate the vast variety of plants and animals whose remains are preserved in the earth. It may be thus considered as an equivalent for such expressions as ‘formed stones,’ ‘imbedded fossils,’ ‘organized fossils,’ &c. None of these expressions are free from objections more or less serious, but the difficulty of superseding them by better is more obvious than the advantage of changing them. Against the use of the word Petrification, there is a reason that a very considerable proportion of the plants, shells, and bones of vertebrated animals enclosed in the rocks are not at all petrified; while, on the other hand, the process of lapatisation has been found to have more perfectly formed or imbedded in objects of comparatively recent date never imbedded in the earth, as the work of a Roman aqueduct in Westminster. Caleareous deposits from springs, which invest moses, shells, and bones with a stony case, are often called petrifications.

PETRINCLA. [MERULIDE, vol. xv., p. 122.]

Lieutenant-Colonel Sykes, in his ‘Catalogue of Birds observed in the Dukhun’ (Deccan), records a species under the name PETROMYZON, from the Deccan. It is remarked that the difference from the SOLITARY THRUSH of Europe (Turdus Cyaneus, Linn.) in its smaller size, shorter form, want of orange eyelids, and white tips to the feathers. Pet. Myzon is a found in the Bengal waters of the Ghauts, and its flight is low and rapid. Colonel Sykes adds, that it appears to correspond with Var. A. of Dr. Latham’s SOLITARY THRUSH, vol. v., p. 47. Petrocincla Maal and Petrocincla cinetb-thyris, are recorded by Colonel Sykes in the same catalogue. (Zool. Proc., 1832.)

PETROICA. [SYLVIDE.]

PETROLEUM, a viscid variety of bitumen, which is found in many parts of Europe and America, but chiefly in Asia from beds associated with coal strata. As much as 400,000 hogheads is said to be collected annually in the Persian empire. It is also abundant in Persia, and it is found, among other places, in the island of Barbadoes. It is used in the preparation of medicine, and is the materia medica of the London Pharmacopoeia, under the name of Petroleum Barbodense.

This substance has a dark reddish-brown colour; it is slightly translucent, and its odour is bituminous. The petroleum of Bechelbronn in the department of the Bas Rhin has been particularly examined by Boussingault: it is viscid, and has a very deep brown colour; it is known in the neighbourhood of the place in which it occurs by the name of stone oil, and it is employed as a substitute for the substance of the grease in diminishing the friction of machinery. It is totally and readily soluble in ether. When this petroleum is heated to the temperature of 210° in a retort, nothing whatever distils; it is evident therefore that it contains no naphtha. When however the heat is raised to nearly 450°, drops of an oily fluid come over, though very slowly; this oil body has a brown colour, and is very liquid; it is rendered pure by drying over chloride of calcium, and rectification. In obtaining this oil in the first instance the petroleum is mixed with water. Petroleum is the name given by Boussingault to this oil; its properties are, that it has a pale yellow colour, slight tincture, and a luminous odour; its specific gravity is about 0.901. Even when cooled down to about 10° Fahr., it retains its fluidity. It stains paper like the volatile oils, boils at 336°, burns with a good deal of flame, but accompanied with much smoke. It is sparingly soluble in water; but in larger quantity in ether. It is yielded by analyses—:

| Hydrogen | 12:21 |
| Carbon | 87:04 |

Dr. Thomson considers it to be constituted of:

| 16 equivalents of hydrogen | 16 |
| 20 equivalents of carbon | 120 |

Equivalent 136 100-

Asphaltene is the solid portion of petroleum. Boussingault obtained it by treating petroleum with alcohol, which dissolves the greater part of the petroleum and leaves the asphaltene unacted upon; by the application of heat the whole of the more volatile constituent is expelled, and asphaltene, possessing the following properties, remains:—

Its colour is black, and it has a great deal of lustre. It is insoluble in a chloroform solution, and is heavier than water. When heated to 275°, it becomes soft and elastic. It burns, like the resins, without leaving any residue. Dr. Thomson concludes, from the experiments of Boussingault, that asphaltene is composed of

15 equivalents of hydrogen | 15 |
19 equivalents of carbon | 114 |
3 equivalents of oxygen | 24 |

Equivalent 153 100-

He is also of opinion that asphaltene is nothing more than petroleum combined with 3 equivalents of oxygen. It appears probable also that the petroleum of Bechelbronn is composed of:

1 equivalent of petroleum | 136 |
14:53 |
5 equivalents of asphaltene | 765 |
85:47 |

Equivalent 901 100-

It is extremely probable that substances very differently constituted may be classed together under the general term of petroleum; for while Boussingault obtained a fluid carburetted hydrogen, which we have just described under the name of petroleum, Drs. Christison and Reichenbach produced a solid carburetted hydrogen from the petroleum of Rangoon; the former called it petroline, and the latter paraffin. [HYDROCR. CARBON.]
Petromyzon, or Stone-sucker; while the circular form of the mouth induced the name Cyclostomes, or pound-mouth fishes, which was bestowed upon them by M. Düméril.

The lamprey is highly esteemed for the table, and is consequently much sought after in the various rivers in which it is found. It is not generally eaten by the authors of our gastronomic books, who, however, do not fail to mention it, as being rather common during the spring and summer season in some of the rivers on the southern coast of England, particularly the Severn; and is found in smaller numbers in several other British rivers about the same period of the year. 'In Scotland,' Sir W. Jardine says, 'they ascend our rivers to breed about the end of June, and remain until the beginning of August. They are not furnished with any elongation of the jaw, afforded to many fishes, in assisting to the passive act of sucking, i.e. the rows at this important season; but the want is supplied by their sucker-like mouth, by which they individually remove each stone. Their power is immense. Stones of very large size are transported, and a large furrow is soon formed.'

The Petromyzon remains in pairs, two on each spawning-place; and while there employed, retain themselves affixed by the mouth to a large stone. The lamprey feeds upon soft animal substances, and often attacks fishes of large size; and fixing itself upon them, it eats the flesh by means of its rasp-like teeth.

Two other species of lamprey, Petromyzon fluviatilis and P. planeri, are found in England. The first, called the lamprey of the river, is found in certain noted rivers of the English rivers. 'Formerly,' says the author of the 'History of British Fishes,' 'the lamprey was considered a fish of considerable importance. It was taken in great quantities in the Thames and in the River Derwent. These, with Tamworth, Walsall, and Ashby Hills, and was sold to the Dutch as bait for the turbot, cod, and other fishes. Four hundred thousand have been sold in one season for this purpose, at the rate of forty shillings per thousand. From five pounds to eight pounds the thousand have been known, but a common size of weight of six years, and consequently decrease of price, has obliged the line fishermen to adopt other substances for bait. Formerly the Thames alone supplied from one million to twelve hundred thousand lampreys, but now is nothing.'

This fish is usually about one foot in length, and coloured like the common eel; the lip surrounding the mouth has a continuous row of small points; there are two large teeth on the maxillary ring; and the dorsal fins, which are elongated, are distinctly separated. The third species, called the oviparous lamprey ('P. Platanus'), has two dorsal fins placed close together, the body is of a shorter and stouter form; and it may moreover be distinguished from the common lamprey by its lips being furnished with numerous papillae, forming a thick-set fringe.

The lamprey is a very great eater, and is usually smaller than the common species; it is found in the Tweed, and in some of the streams in the southern parts of Great Britain, but appears to be comparatively scarce.

The second genus of Petromyzonidae is the Mixine of Linnaeus. In this genus the maxillary ring is altogether membranous, and only furnished with a single tooth on its upper part; the series of teeth on the tongue are elongated, and arranged in two rows on each side, so that the jaws of these fishes appear to be lateral, like those of insects or the Nereids, a circumstance which induced Linnaeus to place them in the class Vermes. The mouth is circular, and furnished with eightcirri; in its upper margin is a spirally extended, which neither opens nor closes. The body is cylindrical, and furnished with a fin which surrounds the tail. The skeleton is here reduced to a mere cartilaginous tube. These singular fishes pour out such an abundance of mucus through the pores of their lateral line, that the water in the vases in which they are kept seems to be converted into a jelly. They attack and pierce other fishes like the lampreys. A certain Myxine found in the South Seas, which, by the author of 'Fuchs's,' possessing seven branchial apertures like the lampreys, has furnished the type of Düméril's subgenus Hepatodon; in the subgenus Gastrobranchus (Block) the intervals of the branchion, instead of having separate openings, communally united into a single orifice, which determines in a distinct hole situated under the heart. To

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This section belongs the Myxine, Glutinous Hag, or Borer of English authors, the *Marine glutinosa* of Linnaeus, and *Gastrobranchus* of modern writers.

The next genus of this section (Ammodoncetes, of Duméril) has the same general form as the lampreys, and the branchial orifices are the same; but the mouth is semicircular, and possesses no teeth, and the. upper lip only is furnished with the power of fixing themselves, like the true lampreys.

They have no teeth, but the mouth is furnished with a series of fleshy tubercles.

The fish *Amphicoius* is found in our streams, and known by the names Pride, Sandpride, and Mud Lamprey (*Ammodoncetes branchialis*), affords an example of this genus. This little fish, which is seldom more than six or seven inches in length, and about the thickness of a quill, lives chiefly in the mud at the bottom of fresh-water streams, and is said to be much preyed upon by eels.

The last division of this family is the genus *Amphicoius* of Yarrell, and this contains but one species, a most extraordinary little fish, which, it appears, was first described by Pallas, under the name of *Linonax lanceolatus*, but had not been since his time till the subject of Mr. Yarrell's description was discovered by Mr. Couch on the shore near Taplow.

The *Amphicoius lanceolatus*, or Lancet, is rather more than one inch in length, of a compressed form, and pointed at both extremities, but most so at the tail, and of a pale yellowish colour. 'The head is pointed,' says Mr. Yarrell, 'the mouth is on the under side of the head, the lower jaw rather more protruded than the upper, and on the under side of the mouth on the edge, in shape an elongated fissure, the sides of which are flexible; from the inner margin extend various slender filaments, regularly disposed, which can be extended and retracted. The form of the fish, considered with the sides of the body the muscles are arranged in regular order, diverging from a central line, one series passing obliquely upward and backward, the other series as obliquely downward and backward: the anal aperture is situated one fourth the whole length of the fish in advance of the end of the tail; the tail itself is pointed, from the nose to the end of the tail a delicate membranous dorsal fin extends the whole length of the back, supported by very numerous and minute soft rays; the anal fin is of the same appearance; the sides of the body are supported internally throughout its length by a flexible cartilaginous column, from which the numerous muscles diverge.

PETRONIUS ARMITER is the name of the author, or supposed author, of a kind of novel in Latin, of which we have only fragments, descriptive of the licentious manners of the Romans under the empire. Several young debauchers, one of whose chief amusements is represented strolling about Campania, and their proceedings are narrated by a romantic poet named Bocconia, under the name of a ihren or other writer as to the excessive depravity of morals under the empire. As a picture of manners, the work is not without its value, though it is totally unfit for general readers. The style is fluent and the language is considered classical. The episode entitled 'Trimalcion's Feast' is a curious description of a banquet given by a pompous wealthy freedman. The narrative is intermixed with verses and fragments of poems, one of which refers to the civil wars of Sardar, and contains a very strong invective against the corruption of Roman manners. The prose narrative has been supposed by some to be a satire on Nero and his court, but this supposition does not seem to rest on sufficient evidence. Indeed the age of the work may not, as some suppose it, date it as late as the time of the Antonines. (Ignarra, De Palatina Neapolitana.) Caius Petronius, a man of high rank, is mentioned by Tacitus (Annals, xvi. 18, 19) as being for a time a favourite of Nero, and minister of his pleasures, 'arbiter elegantiae,' which may be translated umpire of fashion and master of the ceremonies. Being afterwards disgraced by Nero through the jealousy of Tigidius, and expecting his death, he anticipated it by causing his friends to be opened in the baths, and to die gradually while conversing with his friends on light subjects. He is stated during this interval to have written an account of Nero's secret debaucheries, which he sent to an emperor. The authenticity of this part of the work, or whether it was written by another Petronius, has been much disputed. The best edition of
PETRONIUS is that by P. Burmann, 2 vols. 4to. 1742, in which all the various opinions on the work and its author are given.

PETROPHILIA. [Mrulide, vol. x., p. 122.]

PETROSILEX. This name has probably been given to two different minerals, viz. compact quartz and compact felspar. Felspar latter has also been termed fusible petrosilex. [Felspar.]

PETROSELINUM. [ Parsley.]

PETROV, VASSILI PETROVITCH, was the son of a cossack officer, where he was born 1736. While in the Zaikonospasski school in that city, he distinguished himself by his aptitude for antient and modern languages, and also by a natural eloquence, and fluency of ideas and words. Whether he exhibited much proecy of talent in poetry was not perceived; it was not until the twenty-seventh year that he composed the ode on Catherine's coronation, which obtained for him the notice and protection of the empress herself, and of many of the nobles at her court, and especially of Prince Potemkin. For a time he held the appointment of reader to the empress, but at his pressing solicitation obtained leave to travel. He visited England and several other countries, from the year 1772 to 1774. After his return he was made imperial librarian, a situation however he was obliged to give up in 1789, on account of ill health, and he retired with a pension to a village in the government of Orlow. Here he divided his time between literary and agricultural pursuits, visiting Moscow every winter, and residing the remainder of the year at Orlow. So diligent were his habits of study, that at the age of sixty he began to learn the modern Greek language. He died December 4th, 1799, in his 64th year. Amongst his original works which he published 23 he again appeared in 3 vols. 8vo., 1811; besides which there is a translation by him of Virgil's 'Aenid,' in 2 vols., 1781-6. His poems consist chiefly of odes and epistles, and although they have now lost much of their first interest, having been written upon particular occasions, many of the former are stamped by high poetical beauty and merit, by vigour and originality of ideas, and by energy of expression; but it must at the same time be admitted that his versification is occasionally harsh, and his sentiments puny and shallow. But perhaps it should be borne in mind however, that at the time Petrov began to write, the language itself had not received that refinement which it now possesses, and he certainly did much for his native literature. Merviankov calls him the 'philosopher bard,' and says that he 'abounds in transcendent imagery, traced with a pen of fire.'

PETRUS DEABA'NO. [Abano.]

PETRUS HISPA'NUS, a native of Lisbon, son of a physician, became so eminent for his acquaintance with the sciences, particularly that of medicine, the practice of which he followed for some time with great reputation. He afterwards entered holy orders, and was advanced to the prebend of the cathedral of Braga in Portugal (Broducar Augusta), he was made cardinal by Gregory X., a.d. 1273; and on the death of Adrian V. he was elected to the pontifical dignity, Sept. 13, 1276. He took the name of John, and styled himself on his seal Joannes XX.; but in his epitaph at Viterbo he is called Joannes XXI.* One of the first acts of his pontificate was to confirm Adrian's revocation of the famous constitution of Gregory X. (enacted at the council of Lyon, 1274), which ordered that the cardinals should be strictly shut up in the concile during their election of a new pope. He did all in his power to assist the Christians in the East, and sent legates to the different princes of Europe to persuade them to engage in a fresh crusade against the Saracens. He died at Viterbo, about eight months after his elevation to the holy see, May 17, 1277, of the injuries occasioned by the falling of the roof of his bed-chamber. He was a very learned man himself, and a great patron of learning; and he engaged in a fresh crusade against the Saracens. The day he died is celebrated in a short medical treatise entitled 'Thesaurus Pauperum, seu de Medecina Corporis Humani Morbis per Empire,' of which there are several editions. It was first printed 1476 in Nurember, fol., the second ed. was 1527, Paris, fol., with a sort of continuation by J. Liebauer, entitled 'Thesaurus Sanitatis, Paruti facieli.' A Spanish translation was published at Valladolid, 1672; and an English one by Humphrey Lloyd, London, 1585, 4vo. It consists of a large number of treatises, containing a great number of diseases, and at the end of each is given a quantity of medical formula taken from the works of the Greek, Latin, and Arabic physicians, to which is now and then a remark is added by the author, which gives value, and contains a great deal that is foolish and superstitious. In the collected edition of the works of Isacc (commonly called 'Isacc Israeliti'), Lugd., 1515, fol., there are three treatises by Petrus Hispanus; one entitled 'Commentarium de Medicina,' printed in fol. xi.-ciii.; the second a commentary on Isacc's work 'De Datura Particularibus,' fol. ciii.-civ.; and the third on his work 'De Urinis,' fol. civ.-cei. There is a tract by J. T. Kihler, which the writer of this article has not been able to consult, entitled 'Vollständige Nachricht von P. Basto Johanni XXI., welcher unter dem Namen Petrus Hispanus als ein Arzt und Weltweiser berühmt ist,' Götting., 1790, 4to. (Cioeci, Vite Pontifici et Card., Haller, Biblioth. Medic. Prakt.)

PETTY, SIR WILLIAM, an eminent political econ. was born May 16th, 1623, at Romsey in Hampshire, where his father carried on the business of a clothier. After his education he went to Oxford, where he had his native place, he went to pursue his studies at Cæn in Normandy. On his return, he is said to have entered the navy, but the time which he spent in this service must have been very short. He afterwards removed to Italy, and resided there three years in France and the Low Countries. During this intervel he studied medicine and anatomy. In 1648 he published a small work, addressed to Mr. Samuel Hartlib, recommending the extension of education to objects more immediately connected with the daily business of life. Soon afterwards he went to Oxford, where the visitors appointed by the parliament had ejected the royalists, and employed himself in giving instruction in anatomy and chemistry; in this capacity he was appointed a fellow of Brazen-nose College. In 1650 he was appointed to the anatomical professorship in the university. He was an active member of a society instituted in Oxford for the cultivation of natural science, and which was the immediate precursor of the Royal Society. When the Royal Society was established, he was one of the council. In 1652 the period of his good fortune commenced by his appointment as physician to the army in Ireland. In 1654 he was employed in the same capacity in the army of the west, in the work which he performed with great ability. He was subsequently engaged as a commissioner in dividing these lands amongst the officers and soldiers of Cromwell's army, and this service must have given him great opportunity for lucrative purchases. He also acted as secretary to Henry Cromwell, lord-lieutenant of Ireland. He appears however to have been well received by Charles II. at the Restoration, and in 1661 was knighted. Sir William Petty died in his house in Westminster, December 16th, 1687, and was buried in the church of his native town, where a plain stone marks his grave,—with the simple inscription—Here lies Sir William Petty. His last will contains the following provisions of his various properties:—'I die in the profession of that faith and in the practice of such worship as I find established by the laws of my country; not being able to believe what I myself profess, nor to worship God better than by doing what I should be done unto, and observing the laws of my country, and expressing my love and honour of Almighty God by such signs and tokens as are understood to be such by the people with whom I live, God knowing my heart even without any at all. The widow of Sir William Petty was created Baroness Shelleburne. He left two sons and a daughter. The eldest son succeeded to the title, but dying without issue, it was revived in Henry, the second son, great-uncle of the first marquis of Lansdowne.

* The confusion about the popes of the name of John is partly occasioned by the fact that Joannes was the name of several popes and cardinals; but not entirely account for it. St. Peter is sometimes called John, or sometimes John XIX. (See Generalis, Chronograph. 6to, Paris, 1850, 501.)
hisp contemporaries. The 'Political Anatomy of Ireland,' one of his most useful works, contains a full and correct description of the state of Ireland in the latter part of the seventeenth century, and gives the first authentic account of the population. Sir William Petty clearly foresaw the advantage that an union of Great Britain and Ireland, and of a free commercial intercourse between the two countries, would have in consequence of the form of the map, several roads which are distinct on the Itinerary are placed on the map consecutively, as if they all formed one line; whilst others, which are not so clearly marked on the Itinerary, are shown on the map. However, the Itinerary is still of great use in explaining the map, and the two together are among the most

Mark Velter however copied it on a scale less than one-half of its original size, and sold it for 20l., for which he was forwarded to Muretus, who published it in 1598. This printed copy has been inserted in the Poliomy of Bertius, in Ilora's 'Orbis Delineatior,' and in Borgio's 'Histoire des grands Choumuns de l'Empire Romain.' The original copy is in the possession of Sir Thomas Pakenham, 2nd Baronet, of Peuteng, and is dedicated to the empress Maria Theresa.

The Tabula Peutingeriana, in Augustin Bibliothecae Vindobonensis none servatur, adeque exerptissima et Christiana Index, fol. Vienna, 1723. The map is 51 feet in length, and is the next largest.

The author, whoever he was, did not intend to draw a proper geographical map, with the relative position of countries [Map; Agathodemon], but merely to collect all the great roads of the empire into a narrow long strip, marking the stations upon each, and the distances between the stations, for the information of travellers and chiefly of military and civil officers. In consequence of this arrangement, the great linear roads are presented in nearly parallel, and most of the great rivers are also made to run in the same direction, from west to east or east to west, which was that of the greatest length of the Roman empire. But the southern and southern boundaries of the empire are brought into close agreement, and each station is marked according to the latitude. For the same reason, the Mediterranean, Adriatic, Aegean, and Euxine seas are all compressed in breadth into the shape of long channels, the peninsula of Italy is thrown into a long narrow strip, and the great Eastern islands, such as Sicily, have undergone a like compression of form. The towns on the roads are marked by small houses; some, being worthy of particular notice, are designated by square buildings like bastions; others, which are small towns and military stations, such as Aquileia, Ravenna, &c., are distinguished by walls and towers. Rome is distinguished by a circle with a crowned figure seated in the middle, and the port of Trayan is curiously sketched near the right bank of the Tiber, at the mouth of the river. Constantinople is marked by a circle and a figure, which however is not crowned. Antioch is the only other city which is also distinguished by a circle and a figure, in which last Mammert thinks that he recognizes the Venus, in many, who he has said to be an interpolation of some copyist of the middle ages, who had before him another map of the time of the Pagan emperors. (Mammert's 'Introduction' to his new edition of Peutinger's Table, folio, Leipzig, 1824.) That the original copy was drawn by several hands which did not suffer decomposed the form of the map, several roads which are distinct on the Itinerary are placed on the map consecutively, as if they all formed one line; whilst others, which are not so clearly marked on the Itinerary, are shown on the map. However, the Itinerary is still of great use in explaining the map, and the two together are among the most

PETUNZ, the Chinese name for a white earth used with kaolin in the manufacture of porcelain: it is stated that while the former (Kaolin) is derived from the decomposition of the felspar of granitic rocks, the latter, or petuntse, as it is termed, is obtained by an alternate process of heating and cooling, and that on account of its fusibility it is employed in glazing the porcelain.

PETWORTH, [Sussex]. A singular principle obtained from the peucedanum officinale, or sea sulphur-wort. By treatment with alcohol a solution was obtained which deposited crystals, to which the name of peucedanin was given by Schiatter. These crystals are colourless, translucent, transparent, inodorous, and insipid; but when dissolved in alcohol, their taste is very aromatic; they melt at 140° without losing weight; and when heated to the same degree, the fluid mass assumes a greenish and afterwards a greyish-white tint: they are insoluble in cold water, and they readily dissolve in hot water, but not by sulphate of iron. It does not appear to possess either acid or alkaline properties. It yielded by analysis—

| Equivalents of hydrogen | 2 or 5-8 |
| Equivalents of carbon | 24 70-6 |
| Equivalents of oxygen | 8 23-6 |

PETUNGIERIAN TABLE is the name given to a map of the roads of the antient Roman world, which is on parchment, and was found in a library at Speyer in the fifteenth century. It was bequeathed by the proprietor Conrad Coers to the Town of Augsburg, who began to prepare a copy of it for publication, but died in 1457, before he could effect his purpose.
valuable antient works on geography which have come down to us.

The map extends to the right, or east, as far as the mouths of the Garonne. Roads are traced through India to several emporia, or places of trade, on the coast. To the west the map ends abruptly on the borders of Spain, including farther north only the eastern part of Britain. It is evident that the map contains, that one leaf is wanting, and it has perhaps been lost.

PEW. A pew is defined by Dr. Johnson to be 'a seat enclosed in a church. Sittings enclosed in a church would perhaps be correct description, as a pew contains several seats; and it not unfrequently happens that different families have the right of sitting in the same pew. The word pew is scarcely to be met with in authors upon ecclesiastical law, who almost invariably use the expression churchseats.'

There were no pews in churches until about the period of the Reformation, prior to which the seats were moveable, such as chairs and benches, as we see at this time in the Roman Catholic churches on the Continent. Before that time no cases are to be found of claims to pews, although in the common-law books two or three claims are mentioned to seats in a church or particular parts of a seat, which were probate or formal.

'By the general law and of common right,' Sir John Nicholl observed (in Fuller v. Lane, 2 Add. Eccl. Rep., 425), 'all the pews in a parish church are the common property of the parish; they are for the use in common of the parishioners, intended to be equally and beneficiently used so as to best provide for the accommodation of all.' The right of appointing what persons shall sit in each seat belongs to the ordinary (3 Inst., 202); and the churchwardens are the officers of the parishioners according to their rank and station; but they are subject to his control if any complaint should be made against them.' (Pettman v. Bridger, 1 Phill. 323.)

A claimant has a right to a seat in the church without any payment for it, and if he has cause of complaint in this respect against the churchwardens, he may citethem in the ecclesiastical court to show cause why they have not seated him properly; and if there be persons occupying pews who are not inhabitants of the parish, they ought to be displaced in order to make room for him. This general right however of the churchwardens as the officers of the ordinary is subject to certain exceptions, for private rights to pews may be sustained upon the ground of a faculty, or of prescription, which presumes a faculty.

The right by faculty arises where the ordinary or his predecessor has granted a licence or faculty appropriating certain pews to individuals. Faculties have varied in their forms, either expressed or implied; and his family 'so long as they continue inhabitants of a certain house in the parish: ' the more modern form is to a man and his family ' so long as they continue inhabitants of the parish.' The faculty is the least exceptional form. (Sir J. Nicholl, 2 Add., 426.)

Where a faculty exists, the ordinary has parted with his right, and therefore cannot again interfere: it has however been laid down in the ecclesiastical court that where a party claiming by faculty ceases to be a parishioner, his right is determined. Sir John Nicholl states, 'Whenever the occupant of a pew in the body of the church ceases to be a parishioner, his right to the pew, however founded, and however secure during his continuance in the parish, at once ceases.' (Fuller v. Lane, 2 Add., 427.) The same doctrine has been sanctioned by the Court of King's Bench, (Byerley v. Windus, 5 Barn. and Car., 18.) But in a case in the Court of Exchequer, chief-baron Macdonald was of a different opinion. The question there was whether there could be in law a prescription for a person living out of the parish to have a pew in the body of the church, and it was held by the court that 'Lousley v. Hayward, 1 K. and J., 533.' As prescription passes for years or form, these opinions seem to be at variance. Where a claim to a pew is made by prescription, as annexed to a house, the question must be tried at law. The courts of common law in such cases exercise great power. A certificate of ground being an essential and sufficient com- ment to the house (Mainwaring v. Giles, 5 Barn. and Add., 361); and if the ecclesiastical courts proceed to try such prescription, a prohibition would issue. In order to support a claim by prescription, occupancy must be proved, and also repair of the pew by the party, if any has been re-
ble weekly market, and there are three yearly fairs. The
neighbouring hills are covered with vines and almond and
olive trees, and there is near the town an old castle built
by the Constable Montmorency, whose family the county of Pêzenas at one time belonged. There have been
at least three school, a subordinate court of justice, and an
Exchange.

PEZONPORUS. [PSTTACIDÆ.]

PFPEFEL, GOTTLIEB CONRAD, a German writer
of classic reputation in that branch of literature which
comprises the tale, the fabliau, and the epistle, was born
June 28th, 1736, at Colmar, where his father held an
appointment in the office for foreign affairs. His parent dying in
1738, Pfieffel was left entirely to the charge of an excel-
len teacher, Prof. Roquefier, of the University of Halle for the purpose of applying himself to the study of jurisprudence; but this plan was entirely frustrated by
a severe attack of ophthalms, which terminated in his total
blindness at the age of twenty-one. He married about
two years after this misfortune, and at a later period (1773)
obtained permission to establish at Colmar a seminary for
the education of Protestant youths, in conducting which
he had an able-colleague in his friend Hofrath Lese.
Among his pupils, besides the numerous families of
families, were many who afterwards distinguished them-

selves. The changes produced by the French revolution
however caused this school, which bore the title of a military
college, to be closed, and Pfieffel himself entirely
and deprived of his fable, which has frequently an epigrammatic energy and a piquant turn of expression that render the moral enclosed therein especially striking and effective. Besides these
and the other styles of literature which he had
hitherto cultivated, he undertook to write epistles, epigrams, ballads, and lyrical pieces. In addition
to these original compositions, he translated a great many

dramatic pieces from the French, which he published in five
separate volumes or collections, from 1765 to 1774. These
were indeed rather free versions than literal translations
of the originals; for he did not scruple to retrench on the one
hand what he considered their prosodies, and on the other
to expand those parts of the dialogue which furnished hints
for fables, the value of which was enhanced by
himself, since notwithstanding the skill shown in the arrange-
ment of their plan, and the merit of many of their detached
scenes, they were deficient in sustained interest and effect.

PHŒBON (Ornithology). [Tropic Bird]

PHAKELOPLEURA, the Rev. Lansdown Guilding's
name for a genus of Chitonas, with rather small dorsal
plates, and the by-rows of three or more, with a broad single
row of elongated splicate fasciuli. Example, Chiton
fascicularis. [Chitons, v. i. 96.]

Mr. Swainson (Malacology, 1840), not having analysed
this tribe, has adopted the genera and arrangement of
Guilding. (Zool. Journ., v. ii. 22.) Mr. Guilding's genera are:

1. Chiton, which he divides thus:

* Disk subcarinate, transverse-marginal areola distinct.
  Example, Chiton squamosus, Sowerb., Gen. t. 2; Ch. Ca-
pensis, Gray, &c.
  † Disk roundish, smooth; areola angular and obsolete.
  Example, Chiton marmoreus, Blainv. &c.

Zone distinctly sealy.

Zone slightly reticulated.

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Zone smooth.  

Examples of Chiton marginatus, Linn. Trans., viii., p. 21, t. 1, f. 2; Ch. latus, Lowe.  

2. Aequithoele. The zone thick, fleshy, spinous, spiny, hairy, or rough, &c.  

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Zone spinous.  

Example of Chiton spinosus, Sow., Gen., t. 1.  

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Zone round.  


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Zone hairy.  

Example of Chiton astraeus, Lowe.  

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Animal larviform.  

Examples of Ch. levis, Blainv.; Ch. lareiformis, Barrow; Ch. stratus, Sow.  

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Animal shorter, subrare.  

Example of Ch. latus, Gillingd.  

5. Cryptochithius, Blainv.  

Example of Cryptochithius porosus, Barrow.  

See further, Zool. Journ., vol. v., [Chiton.]  

These subdivisions may be convenient for the purpose of arrangement; but we are not aware of any generic distinctions in the animals themselves.  

PHALACROCORAX. [Pelecanide, vol. xvi., p. 381.]  

PHALENA. [Lepidoptera.]  

PHALANGIA. [Marsupialia, vol. xiv., p. 459 et seq.]  

PHALANGIA. [Marsupialia, vol. xiv., p. 459 et seq.]  

PHALANX (pl. phyale), a name given by the Greeks to the whole of the heavy-armed infantry in an army, but particularly to each of the grand divisions of that class of troops. The number of men composing a phalanx was various, but the general depth of the files in the body so called was sixteen men. The principal signification in phalanx is uncertain; a straight bar or rod of any material appears to have been so called, and the word may have been applied to a corps of troops, in line, from a fancied resemblance in the latter to such object. Eustathius, in his notes on the Iliad, supposes that the term was applied to bodies of soldiers from the clubs or stakes which were the arms of the primitive warriors. According to the fabulous story in Polyæus, the first who disposed troops in a regular order for battle was Phæus, the leader of the army of Bœceus in the expedition to India; he also divided the body of men so formed into two parts, designated the right and left wings, and he gave to the whole the name of phalanx. (Stratag., lib. i.) It is easy to imagine that a disposition of troops in solid masses, such as the phalanxes were, would be adopted in the earliest ages, when the military art was in its infancy, and when instinct must have led men, in time of danger, to keep themselves collected together for the sake of mutual support. In ancient warfare, the success of an action depended on the power of resisting the shock of an enemy's charge, and hence it was important to have the bodies of infantry arranged in deep order, that they might maintain unbroken their position on the ground. The Greek troops are represented by Homer as so disposed, and the word phalanx is, in several parts of the Iliad, applied to the masses of the combatants, both Greeks and Trojans;  

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order of the Greeks previously to coming into action is described in Η., xiii. 130, and the succeeding lines.  

A like order prevailed among the Egyptians in the earliest times of their monarchy, and of this fact some interesting vestiges are preserved in the sculptures on the walls of the temple of Icæmembol and of the palace of Luxor. At another former place an Egyptian army was represented as marching in separate divisions of chariots and foot soldiers drawn up in quadrangular bodies, in ranks, and in close order. Each man of the infantry is armed with cuirass and helmet, and carries a shield and a short javelin; and among the figures is that of Sesostris in full panoply, standing in a highly ornamental car. (Rossellini, I Monumenti dell'Egitto, plates 87 to 103.) But, from the nature of the arms and the apparent discipline of the troops, it may fairly be said that, as the epochs relate, the tactics of the Egyptians were in a very advanced state, and consequently that the order of battle there represented was in use among that people at a time much more remote than the age of Homer.  

The ancient Jewish army, modelled probably on that of the people who had long held them in servitude, was divided into bodies of 1000 men each, which were again divided into companies of 100 men (2 Sam., c. 18.) and it is plain, from both the MSS. in the Septuagint, that these companies must have been further subdivided into sections. It consisted both of heavy and of light armed troops: the former wore helmets, coats of mail, and greaves, and in action they carried bucklers and used pikes, lances, and swords; the latter also carried shields and used bows or slings. The men who, from the different tribes, assembled at Hebron to confirm the election of David, are described as being armed with spear and shield, and their discipline is indicated by the expression—they could keep rank.  

The troops in the army of Cærusus are said by Xenophon to have been drawn up in vast masses, the depth of the Lydians being thirty men, while that of the Egyptian auxiliaries was one hundred; and it is added that Cærusus had the appearance of three great phalanxes. (Cyropédia, lib. viii.) It is sufficiently evident therefore that the deep order of battle, with a regular arrangement of the men in rank and file, and some systematical division of the phalanx into sections, prevailed in the earliest times; but it is to the Greek writers that we must go for an account of the particular sections of subdivisions by which the evolutions of the phalanx on the field of battle were facilitated, and which, united to the high discipline of the troops, gave to the body so denominated the reputation which it enjoyed till the fall of the Macedonian kingdom. The formation of such sections of subdivisions, and some changes in the arms or armour of the men, are doubtless what are meant when it is said that Lycurgus, Lyander, and Epaminondas introduced the phalanx among the Lacedaemonians, the Argives, and the Thebans. The Macedonian phalanx, the formation of which is ascribed to Philip, the father of Alexander, appears to have been a body of 6000 men, chosen for their good military qualities, particularly well armed, and subject to certain strict regulations. And its efficiency was so great, that the name of the country became afterwards very generally applied to what was, in reality, the usual designation of the bodies of heavy-armed infantry in the Greek armies.  

Xenophon, though constantly using the word phalanx in speaking of the whole body of troops which he commanded in the retreat from Cunaxa, when he has occasion to mention the formation or employment of a small body of men for any particular purpose, gives it the name of λεγες, and such body appears to have consisted either of 50 or 100 men. On both occasions, some laches being detached from the army, two of them, amounting to 100 men, are said to have been cut off (Anabasis, lib. i.); and at another time, from an apprehension that the order of the phalanx would be broken up in forming a mountain, the army was divided into separate laches of 100 men each. (Lib. ii.) But in the Cyropaédia (lib. ii.) a division of 100 men is called ῥεῖς, and this is stated to have been subdivided into sections of ten a piece.  

The scale just hinted at was probably peculiar to the Athenian army, for Xenophon describes the Spartan troops as formed into six πόλεμις, each commanded by a polemarch; he adds also that the mora was divided into four ἀγίων, eight ἑλεοτριχίας, and sixteen ἰσθιανίας. (De Repub., lib. xi.) The mora is said to have consisted of 600 men, but its
strength appears to have varied considerably at different times.

The only existing works expressly written on the subject of the Greek tactics are those of _Alian_ and his abbreviator _Arrian_, and these authors lived in the time of _Hadrían_ and _Antoninus_, that is, long after the age in which the phalanx was superseded by the legion. Therefore, since their dearth of long campaigns, with the consequent disappearance of the phalanx in the works of _Thucydides_ and _Xenophon_, it seems reasonable to conclude that they appertain to the state of this body of troops in and subsequent to the times of _Philip_ and _Alexander_, when _Callias_ makes the phalanx to consist of 16,384 men of the class called _δωρικαί_ or heavily-armed infantry; but this must be understood to be the whole body of that denomination in an army, and to be composed of four simple phalanges. 

The number of files, and in the course of time, they became very numerous in the Greek armies: they served as the guards of the princes, and were often reckoned among the heavy-armed troops.

The number above mentioned is expressly said to have been _20_, the number continually divisible by 2, and thus admits of a very simple distribution of numbers for the subdivisions. What really was the strength of the phalanx when in the field, during the existence of the Macedonian monarchy, is uncertain, and probably it varied much.

The army of _Alexander_ at the battle of _Arbela_ is said to have consisted of two great phalanges, each divided into four parts, which were also called by that name; there were besides, two divisions of _καβαλάρια_, or light-armed troops, or _τριάνταμα_, which was a complete square of 16 men each way; and the lowest subdivision was called _λοχος_ (lóchos), _decurs_ (δεκατ), or _секунд_ (sékund), or _ενομοῖ_ (enomoi), which is, by that writer, considered as a _φυλή_. The files of the phalanx do not appear to be included in the numbers of the different subdivisions; the _καβαλάρια_ had its own chief or captain (καβαλαράρχης) at the head, and a lieutenant (καβαλαράρχης) brought up the rear. The leader of a single file is called _Διάνικος_; _ενομοῖ_ were preferred, perhaps because their name is _ενομοῖ_. The _καβαλάρια_ consisted of 10 men. A _phalanx_ is the number of such troops in each file, or _tetràλοχος_.

_Alian_ divides the epigrama of light troops into sections, each of which has half the strength of the corresponding division in the phalanx; the lowest division is the _locbus_ or file, which consists of 8 men. The epigrama of cavalry is divided in the same proportions as the bodies of infantry, down to the lowest subdivision, which is called _δήις_, and is made to consist of 64 men.

The _phalanx_ were armed with helmets, cuirasses, and greaves; and in the early ages they carried an oval _boucler_ and a pike, the latter about 10 feet long. The change introduced by _Philip_ in the arms of the opime consisted in the substitution of a larger shield, and of the _φιλέμα_, a pike from 18 to 20 feet in length. The arms of the _peltaste_ seem to have differed from those of the _opime_ chiefly in the buckler (from whence their designation is derived) being round and only about two feet three inches in diameter, and the pike being short. It is said that _Iphicrates_, instead of a metal cuirass, allowed to this class of troops only a corset of strong linen; but apparently this regulation was not always followed. The light-armed troops were frequently called a _κρίκος_ only, and their arms were small _javelines_, _bows_ or _slings_.

A _phalanx_ in line, as considered being constituted of two equal parts or wings (επιτάγα), there was no central division, but the parts of junction were called the _φιλέμα_. In the usual order of battle it was drawn up with its front parallel to that of the enemy, but it not infrequently happened that one wing was kept retired.

The last method was practiced by _Rome_ at the battle of _Lutetia_; the wing engaged was strengthened so as to have 20 men in depth, and the line gradually diminished to the opposite extremity, where it was only 6 men deep. Sometimes also two phalanges advanced in this order, that is, the _phalanx_ of the _Athenians_, according to circumstances; and this disposition was called the _πλασμόν_ or the _plasium_ (πλαστόν).

When a double phalanx was formed with their fronts in reversed positions, the order was called _επιτάγα_ or _γαντζον_ (gantζον). It seems to have been near the last, except that the men faced in opposite directions, from the centre towards the wings.

When standing in open order, each soldier in the phalanx was allowed a square space about six feet each way; but when prepared for action, this was reduced to three feet, and occasionally to about eighteen inches. The _file-leaders_ and the _rear-rank men_ were always chosen from the men who could best sustain the first divisions of the charge, and the success of the charge, and the latter performed the important duty of urging on the men immediately before him, in order that the whole body might not give way to the counter-pressure of the enemy's mass.

After the introduction of the _merarchia_, and the _sartises_ above mentioned, the _phalanx_ might present a formidable array of five ranks of such weapons projecting horizontally before the front of the line; for, admitting the men to be three feet each other in depth, and that each man held in his hands about six feet of the length of the weapon, the point of that which belonged to the fifth man would project two feet beyond the file leader. _Alian_ remarks, perhaps accurately, that the _phalanx_ was that of giving to the men from the first to the third or fourth rank spears successively longer in proportion to the distance of the rank from the front; in which case all those weapons must have projected equally before the _enemies_ of the troops _Διάνικος_.

The position of the _phalanx_ was sometimes changed by a wheel of the whole body on either extremity as a pivot; and this was done with the men drawn up in close order. But the reversion of the front was performed in one of the three following ways:—The _Cretan_ method, as it was called, consisted in making each file countermarch almost upon the ground it occupied, the _file-leader_ going to the right-about, and moving to the rear, all the men of the file following till they were on the same line with the men of the _rear-rank men_ only changing his front. Lastly, the Macedonian method was performed by the front-rank man going right about on his own spot, the others passing him in succession and arranging themselves behind him. These movements appear to have been preferred by the Greeks to a simple change of front to be effected by making each man turn upon the ground he occupied, since they allowed the _file-leaders_ to constitute always the foremost rank of the line.

The number of men in front of the _phalanx_ was doubled by causing every second man in the depth to move up to the interval between every two men in the rank immediately before him; thus reducing the depth of the _phalanx_ to eight files without extending the front. And when the front was to be extended without increasing the number of men in it, the _troops_ merely, by a flank movement, opened out from the centre each way. _Arrian_ justly observes that these evolutions should be avoided when in presence of the enemy; and he adds that it would be preferable to extend the front by bringing up cavalry or light troops to the wings.

On a march, the _phalanx_ was thrown into a column, whose breadth depended on that of the road; and a formation of some separate bodies, consisting of 100 men each, for the purpose of protecting the main body while returning to its former order after having passed a ditch, is mentioned by _Xenophon_ (Anabasis, lib. iii) as being then, for the first time, employed. The march of two phalanges in parallel and
PHA LYRIUM, a tyrant of Agrigentum in Sicily, of whom very little is known. He was a native of Astypales in Crete. It is generally agreed that he reigned sixteen years, and accounts for the capture of the adjacent countries to the southward of this period. Eusebius and Suidas place his accession in Ol. 52 (b.c. 570); Jerome, in Ol. 53, 4 (b.c. 565). A still earlier date than the former has also been given, namely, Ol. 31, 2 (b.c. 665); but this is contradicted by the statement of Aristotle (Rhetor., ii. 20, sect. 5), who speaks of Phalaris as the contemporary of Stesichorus, and by Diodorus Siculus (Excerpta Vaticana, xxviii., p. 25), who mentions Phalaris between Aegop and Cresus. Phalaris was depoted and murdered by Theron, the father of Heron and Xenocrates, who flourished in the time of Pindar. (Schol. Pind., Ol. 3, 68.) Phalaris was infamous for his crueltv, and especially for the particular device which he had invented for conviction by the sacrifice of the victim, the victim of the sacrifice in a bull of bronze, in order that he might enjoy the pleasure of hearing their cries. (Cic. De republ., iii. 30, 41.) This appears to have been the tradition widely spread even in the time of Pindar, who says (Pyth., i. 21): "Cresus's reputation for hospitality fades not away, but an evil report everywhere attaches itself to the cruel Phalaris, who burned people in a brazen bull; nor is he praised in festival meetings where the harps resound in the ball and where the youthful choruses sing. Perillus, the maker of the bull, was the first of those who perished in this way; and when Phalaris was deposed, the mob rose against him, and presticed upon him the same cruel death on the same sad occasion. (Cic. Off., ii. 7, § 26; De Nat. Deorum, iii. 33, § 82; Verr., v. 56, § 145; De Fin., iv. 23, sect. 64.) Ovid, Ibis, 439, says that his tongue was first cut out (lingua prius ense retorto); and Heracleides Ponticus, that his mother and his friends were burnt with him. The other accounts of his death are not trustworthy. (Bentley's Phalaris, p. 135.) This bull was carried to Carthage: the image which was so popular a king of Agrigentum in the time of Timaeus was then sent to Carthage, and presented to the river Gea; the bull of Phalaris was however afterwards restored to the Agrigentines by Scipio. (Cic. Verr., iv. 33, sect. 73; Diodorus Siculus, p. 614, 90.) On the bull of Phalaris, see also Shaw, Religious Festivals, p. 10, seqq. There were other stories about this tyrant: so that he was said to be an eater of human flesh (Aristot., Ethic, Nicom., vii. 5, § 7); that he used to devour sucking children (Cicero, Apud Athenaeum, p. 396); and that he even fed his own son (see the passages quoted by Bentley, Phal., p. 369). The name of Phalaris is best known in modern times from the celebrated controversy between Bentley and Boyle with regard to the authenticity of the epistles attributed to him. The epistles appealed by Boyle, which have been satisfactorily established by Bentley in his admirable Dissertation on the Epistles of Phalaris. These epistles, which were probably written by some rhetorician or sophist in the time of the Cæsars, are utterly worthless in a literary point of view. It is certain that William Temple ventured to select them as one of the greatest works of antiquity. They have been reprinted several times since Boyle's notorious edition. The best edition is that of Schäfere (Phalaris Epistulæ, Gr. et Lat., cum nostri Lezennausschiessenem, left, etc.) to which theReader will refer. But Phalaris auriarius, a native of the Canaries, is naturalised in Europe, and is the only one which is cultivated. The seed is imported into the South of Europe from Barbary. It is also cultivated in the Island of Thaæt and some other parts of Spain. It is sown in February and reaped about the end of September, but being a plant of southern climates, and late in ripening its seed, it is an uncertain crop. The produce is from thirty to forty bushels per acre, and sometimes even fifty bushels are obtained.

PHA LAR O P E, [Scolopacidae.] PHAL E R I S, [Auk, vol. iii., p. 100.] PHALE R U M. [Athenes.] PHAL L U S I A, M. Savi n y's name for a subgenus of Aegidius, as we have seen, is not one of the healthiest parts of the world; but Phalaris carinaris, a native of the Canaries, is naturalised in Europe, and is the only one which is cultivated. The seed is imported into the South of Europe from Barbary. It is also cultivated in the Island of Thaæt and some other parts of Spain. It is sown in February and reaped about the end of September, but being a plant of southern climates, and late in ripening its seed, it is an uncertain crop. The produce is from thirty to forty bushels per acre, and sometimes even fifty bushels are obtained.

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PHA R A M U M, De Montfort's name for a genus of microscopic Foraminifera, generally arranged under the genus Robulina of D'Orbigny. (Foraminifera, vol. i., p. 348.)

PHA R I S E E S, a sect among the ancient Jews. The name is derived from the Greek φαρασσας, and this word is probably of the Hebrew נבוך, to separate. Suidas says, 'The Pharisees are by interpretation χαρασμοποιοι (the separated), because they divided and separated themselves from all others, in exactness of life and in attention to every point of the law.' The origin of this sect is unknown. Josephus, who was himself one of the Pharisees, speaks of them as flourishing long before he was born. He says (Antiq., b. 13, c. 9): "At this time (about 150 B.C.) there were three sects of the Jews, the Pharisees, Sadducees, and the Essenes. On several occasions he describes the Pharisees as the chief sect, and as possessing great authority among the people. They believed in the existence of angels and spirits, and held the doctrine of the resurrection; but their notion of the latter appears to have been Pythagorean, namely, that there is a resurrection of the soul only by a transmigration into another body. From the benefits of this resurrection they shut out all the nobly invested, even those who were once justly employed in the service of the soul from the body. While the Essenes maintained that all things were ruled by absolute fate, and the Sadducees that all things were under human control, the Pharisees adopted a middle course, maintaining that all things were pre-destined, and others left for men to determine. It was a leading maxim of the Stoics that some things were in our power, and others not in our power; and Josephus tells us that the sect of the Pharisees was very much like that of the Stoics.

But they were mainly distinguished by their zeal for 'the traditions of the elders,' to which they attached an importance equal to that of the Mosaic writings: and it is from this source that the title of Pharisees is derived. (Josephus, cf. 18, 2, seq.) From an observation of the punctilio of the law itself, that they were called Pharisees. Several of these traditions are mentioned in the New Testament, but they are only a small portion of...
PHARYNX is the cavity in which the food is received in its passage from the mouth to the esophagus or gullet. In man it is the second part of the alimentary canal, having its widest part above, where it is fixed to the base of the skull. The nasal passages, the mouth, and the air passages, open into the pharynx in front; behind, it is attached to the spinal column; and on either side it is bound together by the deep vesels and muscles of the neck. It is lined by a mucous membrane, but is chiefly composed of layers of strong muscular fibres, called the constrictors of the pharynx, by whose successive contractions the food received from the mouth is gradually forced from it and directed towards the esophagus.

PHASCALOTHE'RIUM. [MARSUPIALIA, vol. xiv, p. 466.]

PHASCO'GAELE. [MARSUPIALIA, vol. xiv, p. 456.]

PHASCOL'ACTOS. [MARSUPIALIA, vol. xiv, p. 661.]

PHAS'COLOMYS, M. Geoffroy's name for the Wombat. [MARSUPIALIA, vol. xiv, p. 463, et seq.]

PHASE (παθη, phase, appearance). When a phenomenon changes its character gradually, any particular state which it is necessary to distinguish is called a phase. Thus we have the phases of the moon, meaning the different forms which the enlightened part takes during the month; the phases of the weather, meaning the succession of heat and cold, wet and dry, &c.

PH'ASEOLUS, a genus of plants of the tribe Phaseolae, in the natural family of Leguminosae. The name is said to be derived from phaseolus, a little bean, which the ancients considered useful; the term being a corruption of the meaning of 'boat' is derived from the resemblance of a boat to the form of a bean. Two species are very well known in this country, P. vulgaris, the common Kidney bean, and P. multiflorus, the Scarlet runner; their unique pods being much esteemed as legumes, and also for pickling. The ripe seeds are however employed on the Continent, and form the haricots of the French. The genus is however one of which the species are indigenous in tropical parts both of the Old and New Worlds. Several are cultivated in India, and are some of the principal articles of the agriculturist's attention, as the ripe seeds of several species form pulses which are much used by the natives as a portion of their diet, and some of which, like the Kidney bean, abound in nutritious matter.

The genus Phascolus is characterised by having a bell-shaped two-lipped calyx. The corolla is papilionaceous, and has the keel, as well as the diadelphous stamens and the style, spirally twisted. The Legume is compressed or cylindrical, with two valves, and is many-seeded, with more or less conspicuous cellular partitions between the seeds. The hilum of the seed is ovate-oblong. The plants are herbaceous or suffruticose in habit, bearing tiny green leaves or oalcate, the leaflets with parallel stipules. Racemes axillary. Pedicels usually in pairs, single flowered.

Phascolus vulgaris (Kidney Bean) is said to be a native of South America, but is also grown in India, that country being well supplied with this plant by means of the East India Company. It is introduced from Cashmer, and is therefore inclined to consider that it was introduced into Europe from the most northern parts, such as Caulif and Cashmer, and that this accounts for our being able to cultivate it at a lower temperature than other species of the genus. P. multiflorus, or the Scarlet runner, is a native of South America. Both are delicate, and cannot be safely planted in the open air till the beginning of May. In a warm or pit, green pods of the dwarf kinds may be gathered all the winter, and they have this advantage, Mr. Loudon observes, over forced productions of the fruit kind which require to be ripened, that the pods are as good from plants in the stove in midwinter, as from those in the open garden in midsummer. The cauliflower bean is an article of field culture in France, America, and in most warm countries. Speechley suggests that it might become an object of field culture in this country, and be useful in times of scarcity more especially, as one of the vegetables which, if flourished in pots, or even in the open air, will grow luxuriously even in a dry parching season, in which respect it differs from most other culinary vegetables.

In India several species of Phascolus are extensively cultivated:

Phaseolus Mungo, or Moog, is one of the dry leguminoius grains of India, which are of great value whenever the periodical rains fail and rice cannot be grown, and famine is the consequence. It requires a strong rich soil, and is raised in the greatest quantities on rice lands during the cold season. In from seventy-five to ninety days SCHMOOG.
it is ready to cut, and yields about thirty-fold. The ripe
grain is well tasted, nutritious, and is considered whole-
some.

P. Max., Kala Moog of the natives, and black Gram of the
English, is like the former, but distinguished by its black
seeds, and is, like it, found in a cultivated state: it takes
about the same time to ripen, and yields nearly the same pro-
duct.

P. radicatus, called by the natives Mash and Oorud, is, like
the two former, found in a cultivated state, and is the most
esteemed of all the Indian leguminous plants. Besides using
it as a food, the natives make bread of the meal for some of their religious ceremonies.

P. aureus, or Sona Moog of the Bengalees, is found in a
cultivated state in the Bengal presidency, but is not known
on the Coromandel Coast. It is sown, like the others, about
the middle of November, and reaps in February on the beginning of March.

P. aconitifolius, Moth of the natives, is cultivated in the
north-western provinces, and used for feeding cattle.

PHASES OF THE MOON. [Moon.] PHASIANOPOI. [Trocchide.]

PHASIA'NIDÆ. [Patonida; Pheasants.]

PHASIS (φασίς), the principal river in ancient Colchis,
and is supposed to arise in the mountains of the Rioned, and
in Armenia, according to Strabo (xv. 498), and among the
Moschi, according to Pline (Hist. Nat., vi. 4). It flows in a
westerly direction into the Black Sea. It was navigable in
ancient times for large ships for thirty-eight miles from the
coast, and for vessels as far as from the town of Sharapan
(Sharapan), on the boundaries of Colchis and Iberia, from
which place goods were conveyed by waggons in four days to
the river Cyrus. (Strabo, xvi. 498; Pline, Hist. Nat., vi. 4.)

There are no ancient remains at Sharapan. The Phasis
sometimes considered as the boundary between Asia and
Europe (Herod., iv. 45), and was regarded in the time of Au-
gustus as the northern boundary of the Roman dominions in
that part of Asia. (Strabo, xvi. 498.) The Phasis received
many affluent streams, of which the principal were the Glaucus
and the Rion, by the latter of which names the Phasis itself is
sometimes called. The Glaucus appears to be the modern
Ghraulis, which comes from Elburz. From the junction of the
Rion and Grahulis the river is navigable for boats at all
seasons, has no obstructions, and is from twenty to thirty feet
deep, with a current of about two miles a day and a half an
hour. It flows through a level country, which is lower than the
banks of the river. There is a bar at the mouth of the
Phasis, with only six feet water, the only circumstance that
prevents the river from being entered by the largest vessels.
The navigation of the Phasis is now entirely in the possession of the
Russians, who have made near the mouth of the Phasis, the
Russians have a station or castle. Kottias on the Rion is the
seat of the Russian government of Imiria.

In ancient times there were one hundred and twenty
brigantines, and the Phasis among them, according to Strabo,
(Hist. Nat., vi. 4), and many towns upon it, of which the most
important were Ap, the old capital of the Abers, which is celebrated in the
legends of the Argonautic expedition [Argonauta], and
Phasis (Pri), situated at its mouth. There are no remains
of antiquity on the Phasis. On the banks of the river there
were in ancient times, as is also the case at the present day,
great numbers of pheasants, which are said by Martial
(Ep. xiii. 72) to have been brought into Greece by the
Argonauts, and to have been called Phasiani, from this river.

The Phasis was noted in ancient times for the excellence
and purity of its waters, Arrian, in his "Periplos of the
Euxine Sea," informs us that water taken from it will pre-
serve itself clear for a year; and this is doubtless not an
exaggeration, it serves to show in what high estimate its
waters were held at that time. [Georgia, p. 176.]

PHEASANTS. [Raphian.] (London Regul. Jour., vol. iii., p. 33, &c.)

PHEASANTS. [Varinian.]

PHEASANS. The name Varinian, a native of Ferva, a
place near Camerum, Greek Camerum, called himself
Phasius, in Greek Phavorinus (φαβαρίνος). His family
name was Guarino, which he turned into Varinian (بارینیان). He is also called Cameras, from the town of Camerum.
The precise time of his birth is unknown, but it is probably
some years after the middle of the fifteenth century. He is
represented, about 1490, as a pupil of Angelo Poliziano, and
as exquisitely skilled in Greek and Latin. He devoted
himself to the church, and held the office of the order of the
Benedictines. In 1512 he became librarian to the Church of
vanni de Modici, afterwards pope Leo X.; and in 1514 he
was made bishop of Nucea, over which diocese he presided
twenty-three years. He died in 1537.

Phavorinus was assisted by two eminent scholars, Charles Antenoreus and Aldus Manutius, edited, in 1496
'Corus Copio et Horti Adonidia,' consisting of seventeen
grammatical tracts in Greek, selected from thirty-four an-
tient grammarians. In 1517 he published a collection of
epithets of the Metamorphoses of Ovid. He died in 1518.

But the work by which he is chiefly known is his Greek
Lexicon, which, after the labour of many years, he com-
pleted in the lifetime of Leo X. It was published at Rome
in 1533, fol., and again in 1636, fol., under the direction of Joachim Camerarius, with several improve-
ments. The last edition, still further improved, was printed
at Venice, in 1712, by Antony Bortoli, in a neat type and
in a handsome form. The first edition is beautifully printed
and the typography very smart; but that of 1590, and
the best for all the purposes for which a lexicon is consulted.
This very useful lexicon is compiled from the various pre-
ceding lexicons, grammars, &c., or, as the title expresses,
"from many and different books." The words are given
in alphabetical order, and all the definitions and explanations
are in Greek, which Phavorinus is said to have spoken and
written as a native Greek. Henry Stephens appears
indebted to the north of Phavorinus in the compilation of his Greek Lexicon, though he nowhere
acknowledges his obligation.

(Fabrics, Bibliotheca Graecæ; Roscoe, Life of Leo X.;
Quarterly Review, vol. xiv.)

PHOSPHORS. (Xen. Hic.)

There were sent to America that useful and
sapid bird the Turkey, we are indebted to Asia for those
equally desirable additions to our homesteads, preserves,
and farm-yards, the Peacocks, the Pheasants, and our common
partridges.

The views of Mr. Vigers and some other ornithologists
with regard to the Phasianidae are sketched in the article
Pavonini.

Mr. G. R. Gray arranges the Phasianidae as the second family
of Raders, Gruidae being the first; and he divides the
Phasianidae into the subfamilies Pavoine, Phasianine,
Gallinae, and Meleagrineae. The Pavoine and Meleag-
rineae are noticed in this article Pavenode. The
Phasianine consists of the genera Azia, Phasianus, Spheniscus,
Thaumaolea, and Genus. The Galline comprehend the
genera Elopomus, Monalus, Lophophorus, Gallus, and
Tragopan.

Phasianus. (Linn.)

Generic Character.—Bill of mean length, strong; upper
mandible convex, naked at the base, and with the tip bent
downswards. Nasal Isabel, lateral, covered with a cartilagi-
 nous scale; cheeks and region of the eyes destitute of feathers,
and the beak is provided with a venomous gland situated on
the first quills equally narrowed towards their tips, the
fourth and fifth the longest. Tail long, regularly wedge-
shaped, and composed of eighteen feathers. Feet having
two toes forward, and three behind, each by a strong spur;
the first joint, and the hind toe articulated upon the tarsus,
which, in the male birds, is furnished with a horny cone-
shaped sharp spur. (Gould.)

The type of this genus is generally considered to be the
Common Phasianus, Phasianus Colchicus, Lyn., a bird
which, though not originally British, is completely naturalised
in our islands, and indeed appears to adapt itself with great
gility to most countries where ordinary care is taken
when kept, and the temperature is not too low for its con-
stitution. The species is too well known to need description,
but an account of its introduction into Europe generally and
into our country particularly, together with a summary of its
habits, will be expected, and we shall endeavour to lay before the reader some information on these points.

If we are to listen to the tales which form that period of
history which borders upon fable, we owe this ornament to
our gardens, and tables to Joscu and his companions, who
brought it from Africa, in the time of the Emperor Argalus.
Manutius thus notices its introduction into Europe (ib. xiv., p. 792):
Phasianus loquatus.

Argivum primum emun transportavit
Canus, et simul ab usual leonis
intra cornua montem; haec est historia, cum utique dicemus, nisi posuimus argumentum in fable, quae
non posse esse videatur;—videri no, nam etiam si
pessimi semper moribus suis, quae sunt in eo, fide
eis autem, non parum luxesse, et Haec est quod pronunciavit, quod est aliquid a probatio:
—Non si tu fide admirabiles quae
Leogoras feeds," says Stenopidae, in the clouds (109, 110),
Archilochus was not necessarily clear of the habits of the pheasant
as a well-known bird (Hist. Anim., v. 31; vi. 24) nor is Athenaeus silent concerning so delicate a dish, which
appears to have become more common as luxury waxed
more general. Nor regarding the royal cookery, Ptilus, who,
thought he kept in his kitchen cinders with which to
excite the fire (υποκάρια σκότων) for multiplication, being aware of their
excellence for the table, appears not to have tasted them.
From the same author it would appear that the ancients,
contrary to the moderns, roasted the fowl, and boiled, or roasted, the
cock birds the best. (Deipn., xiv., lxxiii, p. 654.) It is
the Phasianus of the ancient Italians (Pliny, Nat. Hist.,
x., xlvii., x., xxxviii.,) but seems to have only been within
reach of the wealthy. Thus Martial (xii., xiv., Fult gali-
linaci et.)—

"Si Libycum nobilis votisque Phasis aren,
Phasianaque silvæ memor nobilis aren,
..."

and again, in the epigrams addressed to Basus (iii. 58).

The pheasant has now been spread over the whole of tem- 
perate Europe, and the greater part of the old Continent;
and it is probable that it will be introduced with success
wherever the climate and soil are suitable for the food
congenial to it, and the temperature does not vary too
much from that of its native river, the modern Lion, among
whose banks Mingrelia, formerly Colchis, extends, and lies
between 42° and 43° N. lat., and 21° 49’ and 42° 19’ E. long. [Geog.
ния, vol. xi., p. 176; Phasis.] It is even said to be common
in Siberia, a much colder climate, which would prove
the facility with which it adapts itself to temperature;
and an attempt has, we believe, been made to introduce it
into North America, and into the West Indies.

The south of Europe owed the pheasant, in all probability,
partially to the Greeks, and more proximately to the Ro-
mans: it is the Pheasant of the modern Italians, and Phe- 
zan of the French. More doubt hangs about its introduction
into Great Britain, and the time of that introduction. We
are told that the price of one was fourpence in the time of
our first Edward (A.D. 1299). In "The Forme of Cury,"
which is still preserved, the following directions for
cooking of King Richard II. we find a receipt "for to boile
Pheasant, Parac (partridges), Capons, and Curlew," which
carries us back to 1381. We read of the
in the old ballad of the "Battel of Altonomour." At the
"Intronization of George Nevill," archbishop of York, in
the room of their fourth Edward, we find among the goodly
provision, "Fasauttes, 200." In the "Northumberland
Household-Book," begun in 1513, "Fasauttes" are valued at
twelve pence each. In the charges of Sir John Nevill,
of Chete, at Lammes Assizes, in the twelfth year of the reign
of King Henry VIII., we find twelve pheasants charged
twenty shillings; and they seem to have rapidly increased
in price, as, among the expenses of the saint Sir John
Nevill, for, as he writes it, "the marriage of my son-in-law,
Roger Rockley, and my daughter Elizabeth Nevill, the 14th
of January, in the seventeenth year of the reign of our
sovereign lord Edward VI., we find among the goodly
provisons, "Fasauttes, 200.""

The young

make their appearance towards the end of May or beginning
of June.

Where the country is favourable, it is easy to get up
a head of pheasants, with the aid of good keepers; but it
is more difficult to keep them at home, for they are
wandering birds, and will often leave the place where they are
bred, in search of food and new quarters. There are two
kinds of pheasants that are congenial to their habits. Warm
covers and water are absolutely necessary; and if they are plentifully supplied
with grateful food, but few of them will become vagrants.
Jerusa-


leum artichokes, potatos, and buckwheat. According to
this modern cook, objection is made to the birds. But he finds out the several points of attraction, and avails himself
of them accordingly. Mr. Yarrell states that one good mode
of inducing them to stop at home is to sow, in summer,
seas, peas, and buckwheat mixed together, leaving the
whole crop standing on the ground. The strong and tall
stalks of the beans carry up and sustain the other two, and
all three together afford, for a long time, food and cover.

(Hist. of British Birds.) The same author tells us
that at the end of autumn he has found the crops of the
birds distended with acorns, of so large a size that they
could not have been swallowed without great difficulty.
In December, 1834, we saw eight ripe acorns and a ripe
buckwheat taken together by the crop of pheasants in
Sussex. The acorns had begun to germinate with the
heat and moisture of the crop, and they were sent up to
the gardens of the Zoological Society in the Regent's Park,
and the buckwheat was there planted in the same way as
ordinary wheat is. We have seen potatoes used with excellent effect, not only in
keeping the birds from wandering, but in increasing their
weight and fatness. Carrot load with raw potatoes were,
from time to time, driven into the covers, and the potatoes
were scattered about by hand. The pheasants soon found
them out and threw accordingly, without being collected
together at particular spots, as they too often are to their
destruction. They are very general feeders; neither black-
berry, strawberries, sloses, and other Vaccinium, nor
seeds, and tender leaves find their way into the pheasant's
crop as well as insects. Mr. Selby observed that these
birds sought after the root of the acrid bulbous crowfoot (Ranunculus
bulbosus, Common Buttercup) in May and June, and,
and a friend informed Mr. Yarrell that the pheasants soon
found the Pilowor Crowfoot (Ranunculus foetia). Mr. Selby
further states that the bulb of the garden tulip is an article of
diet which the pheasant omits no opportunity of obtaining;
and he states that, however much the birds are tried, the
beaks are never, or very seldom, seen to reach by means of
its bill and feet. The size to which these birds attain when well fed is considerable. In the catalogue
of Norfolk and Suffolk birds, by the Rev. Revett Sheppard
and the Rev. Mr. Cubitt, the weight of a cock pheasant killed at Campsey Ash,
where the birds were well fed with potatoes, buckwheat, and
barley, is stated at four pounds and a half. 'Some winters
time,' says Mr. Yarrell, 'my friend Mr. Louis Jaquier, then
of the Clarendon, produced a brace of cock pheasants which
weighed together above nine pounds. The lighter bird of
the two just turned the scale against four pounds and a
half; the other bird took the scale down at once. The
weights were accurately ascertained, and, in the presence
of several friends, to decide a wager, of which I was myself
the loser.'

Among the diseases and disorders to which the pheasant,
in common with many other birds, is subject, the fatal
"gaper holds a prominent place. The cause of this
disease is an intestinal worm, which adheres to the internal
surface of the trachea, and causes death by suffocation,
sometimes arising from inflammation of the part, and not
unfrequently by actual obstruction. This entozoon is Syn-
gamus trachealis (Distoma lineare of Rudolphi, Fasciola
Trachea of Montagu), and a most curious animal it is.
The bifurcation of the anterior extremity was taken by
earlier observers for the head, and therefore probably the
name Distoma (double-mouth); but this biform
termination is in reality due to the two sexes. The female is long;
and the short male is afflicted to her for life by means of an
in-
this destructive worm. The first shows several specimens from the trachea of a chicken; the second consists of a small portion of the trachea of a bird laid open, and exhibiting one of this species which has filled the original pine- column. The worm is almost dead in the spirit; and in the third is to be seen the trachea of a partridge completely choked up by them. Mr. Selby observes that many recipes for the cure of this fatal malady (which is provincially called the ‘Neck,’ or the ‘Birds’) are recommended; but none of them seem to be effectual, except the one recommended by Monsau, namely, fumigating by tobacco, found to be an infallible specific when administered with due care and attention. ‘I have examined this remedy,’ he says, ‘by setting the young pheasants, turkeys, chickens, or partridges affected into a common wooden box, into which the fumes are blown by means of a tobacco-pipe. That this often succeeds is true, but we cannot say that its infallibility ‘n all cases; a pinch of common salt, put far back into the mouth of the patient so as to reach the upper part of the trachea, is a nearer and less operose method of cure. With reference to this, it has occurred to us that we never heard of any pigeons being affected with the gapes, and the fondness of these birds for salt is well known. We have heard of a sparrow being attacked by this entozoon, but we did not see the case.

Cooper’s Canon of the plumage of the cock pheasant by the female, when, through old age or organic defect, she is no longer capable of reproducing the species, is by no means uncommon, not more rare indeed, if so much, as it is in the peafowls [Pavo cristatus, vol. i, p. 248], this commoner position in the peafowls (Aves, s. c.) John Hunter (A. R. Soc. London) remarks that this change has been principally observed in the common pheasant. ‘It has been observed,’ says Hunter, ‘by those who are conversant with this bird when wild, that there every now and then appears a hen pheasant with the feathers of a cock; all however that they have described on the subject is, that this animal does not breed, and that its spurs do not grow. Some years ago one of these was sent to Sir Joseph Banks and Dr. Solander. I, happening to be then present, was desired to examine the bird, and the following was the result of my examination—I found the parts of generation to be truly female, they being as perfect as any hen pheasant that is not in the least prepared for laying eggs, and having both the ovary and oviduct. As the observations hitherto made have been principally upon birds found wild, little of their history can be known; but from what Sir Joseph Banks and Dr. Solander have informed us of Sir Joseph Banks, it appears probable that this change of character takes place at an advanced period of the animal’s life, and does not grow up with it from the beginning. This lady, who had seven times been with the males, and particular attention had been paid to her, seemed to one of the hens, after having produced several broods, muted, when the succeeding females were those of a cock, and that this animal was never afterwards impregnated. Hence it is most probable that all the hen pheasants found wild, having the feathers of a cock, were formerly perfect hens, but have been changed by age, or perhaps by certain constitutional circumstances. Having bought some pheasants from a dealer in birds, among which were several hens, I persecuted the year after, that one of the hens did not lay, and that she began to change her feathers. The year following she had nearly the plumage of the cock, but less brilliant, especially on the head; and it is more than probable that this was an old hen, nearly under circumstances similar to those before described.’ The alternative above alluded to has been proved (Phil. Trans., 1827) by Mr. Yarrell, whose dissections demonstrate this change and its causes, and whose observation is not uncommon. It is not uncommon for certain constitutional circumstances producing this change may and do occur at any period during the life of the fowl, and that they can be produced by artificial means. The same subject is still more fully exhibited by the History of British Birds, now in course of publication, observes that these cock-plumed hens are usually called by sportsmen and gamekeepers ‘Mule Pheasants,’ a designation which he considers to be correct, since some of our dictionaries show that the term Mule is derived from a word which signifies barren, and such hens pheasants are incapable of producing eggs, from derangement of the generative organs; sometimes an original internal defect, sometimes from subsequent disease, and it is sometimes suggested, that this is the result of a disorganisation and its effects among birds in the Gold, Silver, and Common Pheasants; in the Partridge, the Pea- fowl, the Common Fowl, the Crowned Pigeon, the King- fisher, and the Common Duck: in the latter species he states that there are some which have been sold as hens, but which, upon examination, proved to be male. We have been unable to arrive at the assumption of the two curried feathers above the tail.

But we must not forget that Blumenbach, in his interesting paper, ‘De anomaliis et vitiosis quibusdam nasum formae, and a aberrationibus communi, read before the Göttingen Royal Society, in July, 1812, has entered fully and particularly into this subject. The species in which he had known the change of plumage to be observed were Columba oenas, and Pavo cristatus, in which he has been unable to verify the remarkable fact, that some males have been sold as hens, and that others have been sold as males, which, upon examination, proved to be female.

In the case of the cock pheasant, from which our specimen is derived, he is indebted to Sir Philip Grey Egerion, Bart., well known, for the accuracy of his observations in various departments of natural history. Sir Philip informs us that about four years ago a hen pheasant at Oulton Park, Cheshire, which had nearly assumed the plumage of the cock, laid a nest full of eggs, from which she was driven by the curiosity of persons who came to gaze at so strange a sight. She then laid another nest full of eggs, sat upon them, and hatched them; but the young did not soon after they were excluded. This is a very curious case, and seems to show that the capacity of producing eggs still remained, the organic defect was sufficient to prevent the production of a female specimen.

Varieties. White and Pied: The Ring-necked and Bohemian Pheasants appear to be considered as varieties by Mr. Yarrell; Temminck and Sir W. Jardine consider the Ring-necked to be completely distinct. The English naturalist will find the reason for the latter opinion stated at length in that useful work ‘The Naturalist’s Library’ (Ornithology), vol. iii.

Hybrids.

Various instances of the common Pheasant breeding with other gallinaceous birds are on record. Edwards has figured a bird supposed to have been produced between a pheasant and a turkey. Three or four of these were discovered in the woods near the house of Henry Seymour, Esq., of Handford, Dorsetshire, and he shot one in October, 1759, the bird which he sent to Edwards. Mr. Yarrell (British Birds) observes that he has twice been shown birds that were said to be the produce of the Pheasant and the Guinea Fowl, and the evidence of the plumage was in favour of the statement. We have seen such a bird, and its feathers corroborated the allegation that it had been so produced. In the article Black Cock will be found accounts of hybrids of this species. He states that Mr. Eton, in his valuable work on the Rarer British Birds, adds to the account of the hybrid shot near Merrington, figured in that work, and noticed in our article, that the brood to which it belonged was also re- mained in the possession of J. A. Lloyd, Esq., of Leston Knolls; the other three, with the old Grey Hen, fell victims to a farmer’s gun, and were destined to the table. Mr. Eton further states that he had also seen another specimen killed near Cowen in Morpethshire, then in the collec-
tion of Sir Rowland Hill, Bart. Mr. Thompson of Belfast describes (Magazine of Zoology and Botany) another hybrid shot at Lochmaw, Wigtownshire, where it had been seen several times on the wing by persons who supposed it to be a wild turkey. In the surrounding plantations Pheasants and Black Grouse were numerous; but this individual, which was preserved for Sir Andrew Agnew, Bart., M.P., was the only one of the kind observed. Mr. John Leadbetter, in 1837, exhibited a hybrid between the Pheasant and Black Grouse, shot near Alnwick, at a meeting of the Zoological Society. This the Duke of Northumberland presented to the British Museum. Dr. Edward Moore (Magazine of Natural History, 1837) notices another hybrid of this kind shot near Plymouth by the Rev. Mr. Morehead, and Mr. Yarrell (British Birds) records his obligation to the Rev. W. S. Hore, of Stoke near Devonsport, for the knowledge of two other specimens killed in Devonshire: one a fine male, in his own collection; the other believed to be at this time in the collection of Dr. Redd, of Trebartha Hall in Cornwall. To conclude this part of the subject in the words of Mr. Yarrell:—"The last of the thirteen examples of hybrids between the Pheasant and Black Grouse here recorded was killed in Northumberland, for a knowledge of which I am indebted to Mr. Selby, of Twizell House. This bird was shot early in December, 1839, by Lord Howick, in a large wood belonging to Earl Grey, a few miles to the east of Felton, and, having been sent to Twizell, I was not only immediately made acquainted with the occurrence, but Mr. Selby has since supplied me with a coloured drawing of the bird, from which the representation at p. 311 was executed." (History of British Birds, May, 1840.)

The union between the common hen and the cock pheasant is by no means rare, as is well known to those whose homesteads border upon pheasant preserves: the produce of this union is called a Pero. Many of these, some of them very fine birds, have been kept together in the Gardens of the Zoological Society in the Regent's Park, but they never, as far as we have been able to learn, exhibited any inclination to breed. They are generally considered, as Mr. Yarrell observes, to be unproductive among themselves, all being half-bred; but the case is different when they are paired either with the true pheasant or the common fowl. Edward Fullcr, Esq., of Carlton Hall near Saxmundham, has recorded that his gamekeeper had succeeded in rearing two birds from a barn-door hen, having a cross from a pheasant, and a pheasant cock, which he presented to the Zoological Society. On the same evening when these three-quarterbred pheasants were noticed, hybrids between the Pheasant and Common Fowl, the Common Pheasant and the Silver Pheasant, and the Common Pheasant with the Gold Pheasant, were placed on the Society's table for exhibition. (Zool. Proc., 1836.)

Before we leave the True Pheasants, we must notice some of the magnificent Indian species, which exhibit such a prodigality of splendour and beauty in their plumage as almost realises the birds which we read of in fairy tales. Such are the well-known gorgeous Gold Pheasant (Phasianus pictus, Linn.—Genus Thamaloeas, Wagler, Chrysophus, J. E. Gray, Nycthemerus, Sw.), the equally well-known delicately pencilled Silver Pheasant (Phasianus Nycthemerus, Linn.—Genus Genneaus, Wagler, Nycthemerus, Sw., Euplocomus, J. E. Gray), and the noble Reeves's Pheasant (Phasianus veneratus, Temm.—Genus Synmites, Wagler). Of these forms we have endeavoured to give some representation as far as our means will permit.

a, Silver Pheasant; b, Gold Pheasant; c, Reeves's Pheasant (Synmites Reevesi)—males.

The two first of these (natives of China) are common in almost every aviary, and there is no reason why they should not thrive well if turned out in our preserves; the second species has, we believe, been so turned out with success: the last is also found in China, but, as it would seem, on the confines of the empire. It is very rare in Pekin. Dr. Latham's description was taken from Sir John Anstruther's drawings, and from writing under them in the Persian language it appeared that the bird was called Doodmang, or Lang, and it was found on the snowy mountains of Suringar.

To Mr. Reeves we are indebted for the first individual ever brought alive to Europe. It was a male, and continued to live for some time in the Garden in the Regent's Park. Tail-feathers from it were exhibited to the Society in 1831, measuring each about five feet six inches in length. A second male specimen was also sent to their menagerie by the same liberal donor in 1834. Hybrids were obtained, one of which is, we believe, still alive at the Garden, from one of these birds and the common Pheasant.

Then there are the beautiful Diard's Pheasant (Phasianus versicolor, Vieill.), which haunts the Japanese woods, and exhibits the manners and habits of our common Pheasant; the rare and elegant Seenmerring's Pheasant (Phasianus Seenmerringii, Temm.), also a native of Japan: but our limits warn us, and we shall proceed to notice some
observations of Mr. Vigors, which appear to us to be valuable in conducting the reader to the next form which we shall have to lay before him.

At a meeting of the Zoological Society in 1832, a male and female pheasant were exhibited from the collection, which was formed by Dr. Latham. Mr. Vigors pointed out the difference between this species and Phasianus albo-crastatus, which he had described in the first part of the Proceedings, and he added that these two species, together with the Phasianus lineatus of Dr. Latham, exhibited to the Committee in 1831, and described in the Proceedings of that date, as well as the Fire-backed Pheasant (Phasianus ignitus, Lath.), formed a group among the Phasians, which appeared intermediate between the typical birds of that family and the genus Gallus, or Jungle Fowl. This group, he observed, distinguished by their crests and by their tails partaking equally of the elevated character of that of the Jungle Fowl and the recumbent character of that of the Pheasant, had been set apart by MM. Temminck and Cuvier under the name of Hauypifères, and by the former naturalist under the scientific name of Euplocamus.

Euplocamus. (Temm.)

Example. Euplocamus ignitus.

Sir George Staunton, in his 'Embassy to China,' first made public this interesting and useful form known to European zoologists. His host at Batavia had, it appears, a very curious collection in the several departments of natural history. He made presents to his guests of several specimens, and among them was this beautiful pheasant, which was sent to England and described by Dr. Shaw. The tail was mutilated, for which reason the representation in the plate, No. 13 (Atlas to Sir George's work), was so conducted as purposely to leave the form of the tail undetermined.

Description. — Length of adult male about 2 feet. Skin of the nostrils stretching backwards over the sides of the head behind the eyes and bluish purple. A crest upon the crown of the head composed of naked-shafted feathers expanding at their tips into slender spreading bars. Head, neck, breast, belly, and upper part of the back, deep chaly-bean or steel-blue shot black; lower part of the back fiery orange red or flame colour, varying in intensity according to the incidence of the light, and passing like a zone round the body, though more obscure on the abdomen; rump and tail-coverts broad and truncated, brilliant bluish green with a paler bar at the tip. Tail when erect folded in some degree like that of a hen; the middle feathers white, and the outside ones black with green reflections. Legs and feet vermilion, spurred.

Female, length about 20 inches. Plumage almost entirely rich cinnamon brown; feathers of the upper parts slightly mottled with black; throat white; lower parts of a paler tint than those above, and having the feathers bordered with white. Elongated head-feathers capable of being erected into a crest, but not equal to that of the male. Tail folded. Legs sparsely hairy.

Locality. Sumatra.

This is the Fire-backed Pheasant of Java ('Atlas' to Staunton's Account of Lord Macartney's Embassy to China), The Macartney Cock of English authors, Phasianus ignitus of Latham.

Gallus. (Brisson.)

Generic Character. — Bill moderate, strong, convex above, curved towards the point, naked at the base, and furnished with two pendant and compressed caruncles or wattles. Head surmounted with a fleshy crest or comb. Tarsi (in the male) furnished with a long and recurved spur: the hind toe only resting on the ground at its tip. Wings short and graduated. The fourteen tail-feathers forming two vertical planes with the backs of the feathers towards each other, and so making what may be called a folded tail; the middle feathers longest and recurved.

The ancestors from which our domestic poultry have descended were undoubtedly natives of Asia; but some doubt still hangs over the questions of the precise breed from which they came, and the exact locality where they were found. That fowls were domesticated at a very early period there is no doubt; and both historians and poets speak of the high antiquity of the race. Thus Petochoteratus relates why the cock is called Πεταλονιος φοινος (the Persian Bird), and how it reigned over that country before Darius and Megabazus. (Aristoph., Birds, 463 et seq.)

To the forests and jungles of India we must look for the race in a state of nature; and though the denizens of our farm-yards may be the result of a mixture of many of the species which there inhabit, zoologists in general agree with M. Temminck in thinking that to the Malay Gigantic Cock or Fowl (Gallus giganteus, Temm.) and the Bankiva Cock (Gallus Bankiva, Temm.) we are chiefly if not entirely indebted for our common poultry.

The domestic cock and hen are the Alectryon (Alectryon) and Alectória (Alectoria) of the Greeks; Gallus and Gallina of the ancient Italians; Gallus and Gallina of the modern Italians; Haus Hahn and Haus Henne of the Germans; and Cog (Gans, Gau, Gal, Cog), Galline, and Poule of the French.

Bold, ardent, and vigilant, the cock has been always considered the emblem of watchful courage, whilst the hen has...
been considered a pattern of maternal solicitude. In this
and other polygamous species, the object to be attained is
the effective impregnation of the greatest numbers of fe-
male by the same male. In this case the spurs are de
veloped as the sexual organs are matured; and it is prin
cipally with these weapons of combat that the battle
which is to leave the field in the possession of the
strongest is decided. The conqueror in his turn, as the
weaker of the two, may apply to him, yield to a younger
and more powerful rival; and thus a numerous, healthy, and
stout progeny is secured.

How the domestic cock and hen were introduced into
Europe is not known: upon such occasions of doubt the Phoenicians are usually resorted to;
but we are ignorant of proof which can bring home the be
nefitation to them more than others. We find it early on the
Greek and Roman coinage, and upon gems; and it figures
in the public shows of those nations. It was dedicated to
Apollo, to Mercury, to Asculapius, and to Mars. Socrates,
in his dying moments, reminded his disciples that he "owed
a cock to Asculapius!" The Rhodian fowls (Martial, iii.
56, above quoted) and those from the Isle of Delos were
celebrated for their superiority in fight and their delicacy
for the table. The luxurious Roman had his hens fed, per
haps, crammed, with meal in the dark. Thus Martial (xiii.
62, "Gallus, Altilla!"

Nor was the same gastronomer ignorant of the value of
the capon. (Martial, xiii. 63.)

The cock has been in Britain before the inva
sion of Julius Cesar, who tells us that the Britons abstained
from tasting the hare, the hen, and the goose; though they
bred them for their pleasure. This abstinence seems to have
originated in superstition; for, in the per
sonal feeling: "Leporem et gal
linam et anserem gustare fase non putant: huc tamen alunt,
animi voluptatis qua causa." (De Bello Gallico, lib. iv.) The
race is now spread all over the civilised world.

M. Lessau asks if it is not remarkable to find the domes
tic hen, differing in nothing from that of our countries,
in all the islands of the South Sea, and among people with
whom Europeans have certainly never communicated?
Cocks and hens, he tells us, were very common at Ouanan,
the natives were ignorant that these birds
were good to eat. They were found among the Papuans,
and among others there was a white variety with all the
feathers frizzled.

We now proceed to lay before our readers a sketch of
the wild breeds; and first of the Gigantic Cock.

This, the Kulm Cock of Europeans, often stands con
siderably more than two feet from the crown of the head
to the ground. The comb extends backwards in a line with the
eyes; it is thick, a little elevated, rounded upon the
top, and has almost the appearance of having been cut off.
The wattles of the under mandibles are comparatively small,
and the throat is bare. Pale golden-reddish hackles orna
mental the head; neck, and upper part; and the feathers
of these spring before the bare part of the throat. Middle
of the back and lesser wing-coverts deep chestnut; the webs
of the feathers disunited; pale reddish-yellow long droop
ning hackles cover the rump and base of the tail, which last
is very ample and entirely of a glossy green, of which col
our are the wing-coverts; the secondaries and quills are pale
reddish-yellow on their outer webs. All the under parts
deepply blackish green with high reflections; the deep
blackish of the base of the feathers appears occasionally,
and gives a mottled and interrupted appearance to those
parts. (Jardine principally.)

Lutot-Col. Sykes, in his memoir on the birds found in
the Dukhan (Deiran), states that it is only there met with
as a domestic bird, and that he has reason to believe that it is
not a native of India, but has been introduced by the
Mussulmans from Sumatra or Java. The iris, he says, of
this same game bird should be whitish or straw-yellow.
The colonel landed two cocks and a hen in England in June,
1831; and they bore the winter well. The hen laid freely,
and in September, 1832, had reared two broods of chickens.
The cock had not the shrill clear pipe of the domestic
bird, and is said to be more limited. A cock in the colonel's possession stood 26 inches to the crown of the
head, but they attain a greater length. The length
from the tip of the bill to the insertion of the tail, 23 inches.
Hen one-third smaller than the male. (Zoot. Proc., 1832.)

Bankiva Cock.

Description.—Space round the eyes and throat bare,
comb much developed, deeply lobed along the upper
ridge, wattles of the lower mandible rather large; long,
clear, brilliant, golden orange hackles cover the head, sides
of the neck, back, and rump. Upper part of the back
below the hackles bluish-black, the middle and lesser
wing-coverts rich deep chestnut, with the webs of the feath
ers disunited; greater coverts steel-blue, secondaries the
same, with a broad chestnut border; quills brownish-black,
edged with pale reddish-yellow. Tail black, richly glossed
with green and blue. Under parts black. This is the Coq et Poule Bankiva of Temminck; Gallus
Bankiva and Equus unius or Bronga (Linn. Trans., xiii.);
Javan Cock of Latham; and many Bantians resemble it
very closely.

Sir W. Jardine states that he has seen three or four spe
imens of another bird very closely allied to Gallus Bankiva,
but rather larger, and certainly distinct: they were all from
the continent of India.

Gallus Bankiva.

We have also to notice the Bronzed Cock (Gallus geneus),
figured by M. Temminck from a specimen sent from the
interior of Sumatra by M. Durand. This is somewhat larger
than the Bankiva Cock, and its large comb is without den
sitations; indeed the edge is quite unbroken; the feathers
of the head, neck, and upper part of the back are rather elon
gated, but not hackles. The Fork-tailed Cock (Gallus
furcatus, Temm. ; Gallus Javanicus, Hofr.) has the comb
also entire, and the throat is adorned with a single large
wattle springing from the centre. The head, neck, and
upper part of the back are covered with feathers, which are
not hackles, shorter and more rounded than those in the
Bronzed Cock.

But the species which bears the name of Sonnerat is in
the judgment of that traveller, the probable stock from
which our poultry are derived. The general opinion of
naturalists is however adverse to that of Sonnerat; and in
deed the great difference in the structure of a part of the
plumage militates against it; not that it is to be concluded
that the bird would not breed with our domestic hen, and
produce fertile progeny; on the contrary, there is good
reason for believing that such offspring would be capable of
continuing the species.

Gallus Sonneratii.

Description. (Male)—Size nearly equal to that of a do
mestic cock; but the bird is altogether lighter, more grace
ful, and has a higher bred look about it; comb large, and
with an unequal margin, but though this margin is jagged,
it is not deeply dentilatated; wattles double, depending from
the base of the lower mandibles; hackles of the neck and
of the wing and tail-coverts dark greyish, with bright golden orange shafts dilating in the centre and towards the tip into a flat horny plate. In some of these feathers the shaft takes an elliptical or oar-like shape; in others it puts on the appearance of a long invetered cone, from the centre of which a battle-like process arises. The substance and appearance of these plates have been not inaptply compared with the wax-like plates which ornament the wings and tail of the Bohemian Chatterer. [BOMBYLLA]. The effect produced by this modification of the shafts is singular and beautiful. Feathers of the middle of the back, breast, belly, and thighs deep rich grey, with paler shafts and edges; tail generally rich deep green; the feathers which immediately succeed the hackles are rich purple, with a pale yellow edge; those next in succession are golden-green, with grey edges, and all are glossed with brilliant metallic reflections. Bill, legs, and feet yellow. The living bird presents altogether a rich and striking object, especially when the sun shines on the plumage.

**Female** less than the cock by about a third, without comb or wattles, but a trace of nakedness round the eye. The plumage (generally) is without the horny structure which distinguishes that of the male. Upper parts uniform brown; neck feathers with dark edges, those of the back and wing-coverts with a pale streak along the shaft, and those of the wings, tail-coverts, and tail waved and mottled with darker pencillings; throat and front of the neck white; feathers of the rest of the lower parts greyish-white, edged with dark brown which predominates towards the vent. Legs and feet bluish-grey.

This is the **Coq Sauvage of Somnart; Coq et Poule Somnare of Temminck; Somnare’s Wild Cock of Latham; Rahn Komrah of the Mahtrattas; Jungle Cock of the English sportsmen in India.**

Col. Sykes, in his valuable catalogue, notes this nptle bird as being very abundant in the woods of the Western Ghauts, where (and this is well worthy the attention of ornithologists) he says there are either two species or two very strongly marked varieties. In the valleys, at 2000 feet above the sea, he tells us Somnare’s species is found sleniter, standing high upon the legs, and with the yellow cartilaginous spots on the feathers, even in the female. In the valleys of wood on the sides of the mountains, at 4000 feet above the sea, there is a short-legged variety. The male has a great deal of red in the plumage, which Somnare’s has not; the female is of a reddish-brown colour, and is without cartilaginous spots at all: ‘in fact’ continues the Colonel, ‘the female of this variety is the Gallus Stanleyi of Mr. Gray’s Illustrations.’ Eggs exactly like those of the domestic fowl in form and colour, but less in size. Col. Sykes shot a hen upon her nest, wherein there were three eggs only, in which the process of incubation had evidently been going on for some days, whence it is concluded that the wild hen sits upon a less number of eggs—queere tomen. In the crow and stomach of many birds, Col. Sykes found nothing whatever, excepting the seeds of a stone-like hardness called Job’s tears (Coix barbata). The irises are stated by Colonel Sykes to be brownish deep orange, and he says that the crow or call of this species is like that of the Bantam Cock. (Zool. Proc., 1832.)

Dr. Latham remarks that this jungle-fowl is by far the boldest and strongest of its size, and that it is anxiously sought after by cock-fighters in Hindustan, who rely on it for victory when pitted against larger game-cocks.

Individuals of this species have been exhibited alive in the garden of the Zoological Society in the Regent’s Park. But whatever may have been the source or sources from which our domestic poultry sprang, and the probability is that more than one wild race have contributed to improve it, the varieties in a reclaimed state are almost infinite. The Spanish breed, entirely black, grows to a considerable size, and the eggs are remarkable for their volume. The Dorking poultry have long been celebrated, and they are known, principally, by having supernumerary toes. The true Dorking and are much esteemed for the table.

Dr. Latham mentions one of this breed that weighed nearly fourteen pounds. Some of the Sussex fowls are very fine.

The fancy breeds are very numerous: among them the Dutch and Polish top-knot and pencilled breed, of two sorts, known as Gold Spangles and Silver Spangles, are much prized by some amateurs if clean-feathered, and make a very handsome appearance in the poultry-yard. Sir John Sebright brought a dwarf Bantam breed, with unfeathered legs, no top-knots, and gold-spangled and silver-spangled plumage to great perfection, as he did the breeds of most animals in which he took an interest. These clean-legged bantams were further remarkable, when true-bred, for having the tail in the cocks folded like that of a hen, and without the usual recurved drooping feathers; whence they were called hen-cocks. But though without these feathers, which are the usual indications of the common cock, no birds could possess higher courage or a more gallant carriage: we have seen one of these cocks bear himself so haughtily that the back of his head nearly touched the two almost upright feathers of his tail; and both cocks and hens without one foul feather about them. The ordinary bantams have feathered legs and the recurved sickle-like tail-feathers. Colonel Sykes remarks that the supposed species Gallus Morio very frequently occurs accidentally in the Dukhun (Deccan), and that, though unsightly, this fowl is very sweet eating. The monstrous form of its bones is black, and the comb, wattles, and skin dull purple. Gallus cripsus, according to Colonel Sykes, occurs accidentally in the Deccan, like the last-mentioned variety. This, generally known as the Pirieland or
Crested Cock, has all the feathers frizzled, or curled, as it were, the wrong way. It occurs also in a domesticated state in Java and Sumatra. The general colour of the plumage is white. Then there is the Silk-fowl (Gallus lanatus), which M. Temminck is inclined to consider distinct, and which comes from Japan and China. This bird is rather small in size, and the webs of the white feathers, which are silky to the sight and touch, are disunited. The comb and wattles are of a lake-purple colour. The peristeam and skin of this kind are also dark; but the flesh is very white. The silk-fowls make very good nurses, and are easily crossed with the common poultry. The Rumpleless or Persian Cock, or 'Rumkin,' as it was formerly termed, is tailless. Colonel Sykes states that the domestic fowl (Gallus domesticus, Ray, Phasianus Gallus cristatus, Linn.) is so abundant in Decan, that in parts of the country not much frequented by Europeans he has bought from eight to twelve full-grown fowls for two shillings. Many of the hens, particularly of the villages in the Ghauts, are not, he says, to be distinguished from the wild bird, excepting only in the want of the cartilaginous spot on the wing-coverts.

For an account of the Hybrida, see above (p. 60). The common hen is subject to the assumption of the plumage of the cock, under certain circumstances, as we have already noticed above (p. 60).* Whilst on this point we would observe that the pea-hen noticed by John Hunter [Pavonidae, vol. xviii.] is preserved stuffed in the Museum of the College of Surgeons, as well as the internal parts. The proper mode of rearing poultry and hatching chickens, both naturally and by artificial heat (hotbeds, steam, &c.), together with the mode of constructing an artificial mother for the young which are so produced, and the method of ordering a poultry-yard generally, will be more properly treated of under the article Poultry, as well as the diseases to which the birds are subject. Of the gaps we have already spoken (ante, p. 59).

Tragopan. (Guv.)

This is the genus Cerionis of Swainson.

Generic Character.—Head crested on the crown, partly naked (on the cheeks and round the eyes), the naked parts terminating in horn-like caruncles behind the eyes; under the lower mandible and on the forepart of the throat a subependent composite carunculated wattle. Tarsi armed with a blunt spur in the male; unarmed in the female.

Mr. Gould (Century of Birds from the Himalaya Mountains) remarks that the genus Tragopan appears to take an intermediate station between that of Meleagris and the more typical Phasianidae, forming one of the links of a chain connecting these groups of the Racional order. The affinity of this genus, he observes, to that of Meleagris, is evident in many characters; nor are some wanting which indicate a relationship to Numida, and even to Fracolinus. Tragopan Satyrus appears to have been the only species originally known. Mr. Gould, in his 'Century,' describes another species, Tragopan Hastingsii, and refers to another, which Mr. Gray, of the British Museum, has dedicated to M. Temminck. (Indian Zoology.)

Example. Tragopan Hastingsii.

Description.—Head of the adult male covered with a pendent crest of feathers, which, as well as the ear-coverts and throat, are black; the neck and shoulders are rich maroon; the chest rich glossy orange red; the naked skin around the eyes is red; the fleshy horns and wattles mingled blue and purple; the upper part exhibit a mixture of zigzag lines and marks of dark and light brown, with numerous and distinct spots of white; each of the upper tail-coverts ends in a large white eye, bordered on the sides with brown, and tipped with black; the tail deepens till it ends in uniform black; the feathers of the under surface are maroon, largely tipped with black, in the centre of which is a large white spot; the beak is black, the tarsi brown.

In the young male the plumage is much less brilliant, the wattles being of a pale flesh-colour, and little developed, as is also the naked skin of the face. The plumage of the female consists of a uniform brown, mottled and barred with mingled lines and dots of various tints, the feathers of the back and chest having a central dash of a lighter colour; the head is crested, with short rounded feathers; the sides of the cheeks are clothed, and there are neither flowy horns nor wattles. (Gould.)

Mr. Gould observes, that although this species and T. Satyrus are closely allied to each other, and doubtless possess similar habits and manners, he is led to believe that their local distribution is somewhat different; at least, he generally receives but one species in a collection from the same quarter; Tragopan Satyrus being transmitted from the Nepalese Hills, while T. Hastingsii is sent from the more northern range of the Himalaya. He further well observes that the changes of plumage which birds of this genus, especially T. Hastingsii, undergo in passing from youth to maturity (and this is well illustrated in Mr. Gould's beautiful plates), are such as to have caused an apparently erroneous multiplication of species.

Tragopan Satyrus, according to the same author, is an exclusive inhabitant of the colder regions of the mountains, in conjunction with the Lophophorus, its proximate relative, feeding on grains and roots, the larvae of ants, and other insects. [Pavonidae.]

Tragopan Hastingsii. (male.)

In conclusion we have to call the reader's attention to the beautiful Phasianus Stickei (figured and described by Mr. Gould in his 'Century') as one of the true pheasants; and to Phasianus Pucratia and Phasianus Ko-o-cristatus, also there figured. Phas. Pucratia appears to us to lend the way from the true pheasants to the Lophophori; and Ph. Ko-o-cristatus to be an Euploccmus, which, even
more immediately than _Euplocamus ignitus_, forms a transition from the genus _Phasianus_ to the genus _Gallus_.

We cannot forbear to add that the Argus _Pheasant_ (Platyp., vol. xxvii., p. 335, et seq.) has been brought alive by the indefatigable collector Hugh Cumming, Esq. It was obtained from Malacca, and is now (June 11, 1840) in good health at the garden of the Zoological Society of London in the Regent's Park. We are not aware of the existence of a living specimen of this noble bird having been brought home.

PHIEON, the supreme ruler of Argos, lived in the eighth century before the Christian era. The Parian marble (No. 31), and several antient writers make him contain the poem which he is said to have composed, and Leverzusius (ib. v., § 2), that he celebrated the eighth Olympian games, places him in B.C. 748, which date is also supported by the testimony of Ephorus (apud Strab., viii., p. 358), that he was in the tenth living from Teomenus. Phieon is usually called tyrant of Argos, but he was in fact the hereditary king. He appears to have obtained the name of tyrant on account of having made himself absolute. (Aristol., _Rep._, v. § 4.) Phieon was an active and enterprising prince; and while Sparta was weakened by wars with the Messenians, he greatly extended the dominions of Argos, and appears to have acquired possession of the whole of the eastern coast of Illyria as far as Cape Malea, and of the island of Cythera, which we learn from Herodotus (i. 82), once belonged to Argos. He attacked the towns which were said to have been taken by Hercules, and claimed the right of presiding over all the festivals which they had instituted. He also increased the privileges of the Eleans and Lacedaemonians against him, and thus led to the overthrow.

Phieon is said to have invented weights and measures, which bore his name (Strabo, viii. 376; Plin., _Hist. Nat._, vi. 5; Pashley, 1797), and is also stated by most ancients and writers to have been the first person to coin silver money, though, according to Herodotus (i. 94), the Lydians were the first people who put a stamp upon gold and silver.

(Chilton, _Past. Heiligen._, vol. i., appendix 1; Müller, _Aeginaica_, p. 51-65; Dörries, _vol. i., p. 177-180, translation._)

PHE'NÉ, Saviugy's generic name for the Lämmerg’eyer (Gypaetus barbatus of Scörer). Saviugy's name is a restoration from Aristol and the Greek writers on natural history; but the form is known to zoologists under the title attached to it by Ray, viz. Gypaetus. (VULTRIDÆ.)

PHER'-CRATES (φηρεκράτης), a writer of the old comedy, contemporary with Aristophanes, Phrynichus, and Eupolis. (Suidas, _Plato._) His play, called the 'Countrymen' (Amyos), was represented B.C. 420. (Athén., v. p. 218, d; Plato, _Protag._, c. 47, p. 337 d.) He wrote seven tragedies (Suidas, _Plato._), of which a few fragments remain, which have been published, together with those of Eupolis, by Runkel, Leipzig, 1829. Pherocrates is only mentioned once by Aristophanes (Lysist., 158). He invented a particular kind of metre, which has been called from him the Pherocratic.

PHERC'Y'DES (φηρχυδέης). There were two Greek writers of this name, the philosopher and the historian, who are frequently confounded, as in Lucian, _Macrobi., c._ 22; Ciceron, _Brev._, v. p. 587, c; Euseb., _Chron._ ad _Olymp._, 59, 4.

PHERC'YDES, the philosopher, was a native of Syros. His father's name was Babis, and he was born, according to Suidas (Phercydes), in the 45th Olympiad, that is about B.C. 600. Diogenes Lartius informs us (i. 121) that he flourished in the 59th Olympiad, that is, about B.C. 544; which date agrees with the account of Cicero, who says (Tusc., i. 16) that he was contemporary with Servius Tullius. He is said to have had knowledge of all the sacred books of the Phenicians or from Egypt, and by others to have been a disciple of Pittacus. (Diog. Lart., i. 116.) He taught Pythagoras (Suidas, _Cic._, _Tusc._, i. 6, De _Res._, p. 596), and appears to have had a considerable acquaintance with natural science. (Diog. Lart., i. 116.) He is said by Cicero (Tusc., i. 16) to have taught the immortality of the soul. According to Suidas, one of his books was called 'Erdygos, or the 'Seven Secrets,' and another otholys, which gave an account of the generation and succession of the gods. Theopompus says (apud Diog. Lart., i. 116) that Phercydes was the first among the Greeks who wrote on the nature of the gods.

There are no particularities of the life of Phercydes worth recording besides the fact that he was contemporary with Herodotus, and flourished between B.C. 480 and 456.

Suidas mentions two historians of this name, and says that one was born at Athens and the other at Leros; but Vossius ( _P. De Hist._, gr. iv. 4) has shewn that they are the same person. It appears probable that Phercydes was born at Leros, and afterwards settled at Athens, whence the mistake of Suidas arose. The work of Phercydes, which is often quoted by the Scholiasts and by Apollodorus, was a mythological history in tenor, was contemporary with Herodotus, and included events subsequent to the mythological period, as the Scythian invasion of Darius (Clem., _Strom._, v. p. 567, c.), and the Ionic migration led by the sons of Cadmus (Strabo, xiv., p. 639). Compare Clinton's _Fast. Hell._, vol. ii., p. 372.

The fragments of Phercydes have been published by Sturz under the title of _Phercydus Fragmenta_, e vario scriptoribus collegit, emendavit, et ab auctore emendavit by Savigny ( _Thalma._, 1829).

The genus Amphithoe, which generally precedes _Pherus_ in the systems, has the four anterior feet nearly identical in both sexes, and their penultimate joint, or hand, is devoid of the _Pherus_ the hand is filiform.

Example, _Pherus_ fucicola.

_Description._—Yellowish ash-colour, or grey-ash varied with red.

Localities.—Costas of England, where it is rare, and found among the sea-weed.

PHERUSA, a Lamarkan genus of Zoophyta. (POLYPIRIA MEMBRANACEA.)

PHIAL'URA, M. Vieillot's name for a genus of Ampelides (Fruit-eaters or Chatterers), placed both by Mr. Swainson and Mr. G. R. Gray in the subfamily of Bombicillinae, the _Scolio-Chatterers_ of the former zoologist. The genera included by both in the subfamily are the same; Mr. Swainson's genus being _Phialura, Bombycilla_, and _Pherusa_, and those of Mr. Gray _Phahura, Bombycilla_, and _Pherusa_, the latter being the _Procia_ of Lord Clinton.

_Generic Character._—Bill remarkably short, but rather strong; culmen acumen, _Nostria_ concealed; _Geope_ enormous; the sides smooth. _Feet pale; anterior scales transverse; lateral scales minute, reticulate. Tail lengthened, deeply forked at the tip._

Example, _Phialura cristata._

_Description._—Total length 9 inches, of which the tail occupies 4 inches. Bill whitish and remarkably short, measuring only 3 lines from the nostrils to the tip, but three-quarters of an inch from the angle of the mouth, which opens just under the eye. Plumage singularly variegated. Crown of head furnished with a crest, which, when not elevated, is scarcely seen. An extremely glossy black mixed with grey and rufous; but, when erected, is very conspicuous, all the feathers being bright rufous, tipped more or less with black; upper sides of the head grey, the lower part and ear deep black; the neck above greyish white, with blackish transverse lines on the back, scapulars, rump, and tail-covers varied transversely with olive, shining black, and bright yellow, each feather olive at the base, black in the middle, and yellow at the tip. Beneath, the feathers are black with a greyish tinge; they are lengthened, semi-setaceous, and of a bright yellow; the neck and breast white, with two transverse lines of deep black on each feather; these lines diminish, and are broken into short spaces or spots on the lower neck, and between the edges of the feathers are tipped with yellow, and this colour increases downwards on the vent and tail-covers, which latter are entirely yellow. The wings, 4 inches long, are uniform deep black, with a blue gloss, much pointed, and calculated for rapid flight. Tail the same colour, the exte
rier basal margins olive; all the feathers narrow, pointed, and gradually lengthening; the feet pale yellow, and three-quarters of an inch from the knee to the claws, the three foremost of which are equally connected together (though slightly) nearly as far as the first joint; outer and inner toes alike, whose tips meet just beneath the hind-toe; claws slender and much compressed. (Sw.)

Observations.—Nostrils not covered by a membrane, open obliquely and ovaly round, with a narrow rim round the margins: first third quadrate 18 length, and shorter than the second, which is longest. (Sw.)

Locality.—South America. A beautiful figure accompanies Mr. Swainson's description in the Zoological Illustrations of South American Birds, vol. ii.

PHIDIAS, one of the most celebrated artists of antiquity, was a native of Athens. His father's name was Charmides.

The exact time of his birth is not known, but, as far as can be judged from the ascertained dates of some of his works, it seems to be generally admitted that it must have occurred between the seventeenth and seventy-third Olympiads, that is, from 490 to 430 B.C. It is said that in early life Phidias practised painting, but there is no authority for his having followed it as a profession, and if he ever practiced it, as it is probable he did, from some of his family being painters, he doubtless soon relinquished it for the sister art of sculpture, in which he afterwards became so eminent. Phidias, according to some accounts says his teacher was Kritias, of Elidas, Geladas, or Aegaladas. Hippias is mentioned only by one author (Dion. Chrysostom., Orat., lvi.), and the modern writers on the life of Phidias seem disposed to reject that testimony. (Emeric David, Müller, Sililg, and others.) After the death of Pericles, he was one of the most distinguished artists of the age.

He was a native of Argos. The times in which Phidias lived were peculiarly favourable to the development of his genius and talents, and his ability must have been shown at a very early age, as it appears he was extensively employed upon great public works, even during the administration of Cimon. Afterwards, when Pericles attained the supreme power in Athens, Phidias was engaged in the embellishment of the city, either by magnificent buildings or by sculptured decorations, was contemplated. 'It was Phidias,' says Plutarch (Pericles), 'who had the direction of these works, although great architects and skilful artists were employed in erecting them.' Among the more remarkable objects upon which his talents were at this time exercised, the temple of Minerva, called the Parthenon, justly claims pre-eminence. No pains and no expense were spared to bring perfection to this noblest of the perfect monuments of art; and, fortunately, enough exists in the present day, both of its architecture and sculptural decorations, to confirm the high encomiums passed upon it by those who saw it in its perfection. The temple itself was constructed mainly of marble and the figures that adorned it, under the direction and superintendence of Phidias, were Callirrates and Ictinus; but the statue of the goddess within the temple was the work of Phidias himself, and, with the exception of the statue of the Olympian Jupiter, which he made at Elis, was the most celebrated of his performances. Minerva was represented standing. In one hand she held a spear; in the other a statue of Victory. Her helmet, highly decorated, was surmounted by a sphinx. The naked parts of the figure were made of ivory. The eyes were of precious stones, and the drapery throughout was of gold,—of which metal, it is said, no less than forty talents were consumed in the work. It is said that the colossal statue of Pericles, Phidias so arranged the drapery that it could at any time be removed without injury. This seems to have been suggested by the feeling that the Athenians might possibly desire to ascertain whether the gold was fairly appropriated; and subsequent events proved the wisdom of the counsel. The people, desiring to have all the glory of this work, had a decree passed prohibiting Phidias from inscribing his name on the statue, but he contrived to introduce his on the pedestal. In after ages, Phidias was chosen in the representation of the combat of the Athenians and Amazons which decorated the shield. A likeness of Pericles was also introduced in the same composition. The exterior of the statue was ever preserved in a parfaite state, but the two pediments, the metopes, and the frieze being filled with statues and reliefs, many of them from the hand and all of them executed under the direction of Phidias. Part of those (known now as the Elgin Marbles, from their having been brought to this country by the earl of Elgin) form a portion of our collection of sculpture in the British Museum. (Basso Rilievi; Elgin Marbles.) Of their merits it is enough to say that the most eminent judges of modern times have added their testimony to that of the ancients by bestowing on Phidias the highest encomiums. (M. de Quincy, Lettres de Londres a Canova; Memoire sur les Ouvrages de Sculpture qui appartenaient au Parthenon, &c., by M. Visconti; Report of Select Committees of the House of Commons, 1815, in which the plate of the statue of Minerva, West, Lawrence, Flaxman, and Westmacott will be found well worthy the attention of the student and amateur; Müller, De Parthenonibus Fustigio; and others.) The eminent sculptor for his part declared, that he should have been well repaid for his journey to England had he seen nothing but the Elgin Marbles.

The enemies of Pericles, with the view of implicating him also in the charge, accused Phidias of having misappropriated part of the gold entrusted to him for the statue of Minerva, and desired that he should be brought to trial. The prudent foresight of Pericles saved both Phidias and himself. He immediately ordered the gold to be taken off and weighed before the people. This however was not done, and the accusation of embezzlement fell to the ground. They then declared the sculptor was guilty of sacrilege in having placed his own portrait on the shield of Minerva. Some of the accounts say he was accused of poisoning; others, that he was banished. Some affirm there was no sentence passed, but that, fearing the consequences of this charge, the sculptor fled from Athens and took refuge in Elis, and that he was employed there to execute a statue of Jupiter. But the generally accepted statement is, that he died in the temple of Altis. This statue was the most renowned of the works of Phidias. It was of colossal dimensions, and was what the antients called chryselephantine; that is, composed of gold and ivory. The god was represented seated on his throne. His brows were crowned with a wreath of olive, and he held in his hand a statue of Victory. The accessories and enrichments of the throne, footstool, and pedestal, were of the highest quality and workmanship. (Pausanias, v. 11, 14, 12, Strabo, viii., p. 333, Casab., and other antient writers; and in the highly valuable work, by M. Quatremère de Quincy, 'Sur le Jupiter Olympiën.') A tradition connected with this statue is interesting from its exhibiting the importance which the Greeks attached to works of art of high character and merit. Phidias, after the completion of his design, is said to have prayed Jupiter to favour him with some intimation of the divine approbation. Jupiter, according to the story, sent a flash of lightning from the altar, and struck the pavement before him. This was hailed as a proof of the favour of the god, and in commemoration of the event a brazen urn or vase was placed on the spot. Pausanias (v. 11) says that this existed in his time. It is probable that this account is founded on a passage of Strabo, who says that the people of Elis, and that he died in prison. There are however strong reasons for thinking that these accusations against Phidias not only are false, but that the accounts of his death and disgrace are not founded on fact. The scholar will find much that is interesting on this subject in some of the works before referred to. To these we would add O. C. Müller, De Vita Phídiae; an Essay by Emeric David, entitled Examenes des Inculpations dirigées contre Phidias, 1817; also an article, by the same, in the Biographie Universelle ('Phidias'); in Junius, Catalogus Artificum, and in the work of Silig with the same title. There can be little doubt, from an expression of Aristotle (Hist. Anim. 605, etc.), that he was not feeling that he had been excite against Phidias, though it is not clear whether he fled or was exiled; and it seems highly probable that he died at Elis. Müller, on the other hand, supposes that Phidias executed the Minerva of the Parthenon, and was then engaged on the statue of Jupiter of Elis to execute for them the statue of Jupiter; that he returned to Athens, and was, after a time, accused by the enemies of Pericles, who threw him into prison, where he was protected by his uncle. He says that Phidias was put to death by the people of Elis, but for what reason is not stated, though some say it was to prevent what Phidias was about to do. An honour which was paid to his memory would be to disprove the assertion that he suffered the death of a criminal. The care of his masterpiece, the statue of the Olympian Jupiter, was entrusted to his family under the
title of Phaidruntai. His study or workshop near the temple was also preserved with great respect, and in the middle of it an altar was raised, consecrated to all the gods. Pausanias (v. 14) tells us that the Phaidruntai, descendants of Phidias, existed in his time—six hundred years after the erection of the statue of Jupiter.

Phidias has been called the 'sculptor of the gods' (Quintilian, xii. 10) from the grand and sublime character which he threw into his productions. Reference has already been made to his two greatest works, the Minerva of the Parthenon, and the Jupiter at Elis. He also executed much admired statues, some in marble, but chiefly in bronze, of Venus, Apollo, Mercury, an Amazon, etc., etc. (See Pausanias, passim; Plin., Hist. Nat., xxxvi.; Lucian, De Imag.) His statues of Minerva were numerous: no less than eighty-nine are recorded. One of these, the Minerva of the Pizaeans, was of wood, gilt; with the exception of the extremities, which were made of the marble of Pentelicus. Although Phidias exercised his skill as a sculptor in all the materials which were in general use for the purposes of art, gold, ivory, bronze, marble, and even wood, yet his productions in a mixture of the two former (chryselephantine sculpture) appear to have been the most highly esteemed, both from the extensive scale upon which he used such rich materials, and from the great importance of the works to which they were applied. This is a branch of what the ancients called toretic art, which seems to mean the union of metal with any other material. Phidias brought to perfection the grand or sublime style of sculpture. The artists before him are represented as having a hard, stiff, dry manner. Phidias improved upon this by making a more careful selection and use of the finest models in nature. After Phidias a softer style was introduced, in which Praxiteles, and after him Lysippus, were eminent. The age of Phidias is justly considered the grand and golden age of sculpture.

PHIGALIA (φιγαλία), a town of Arcadia, the site of which is supposed now to be occupied by the modern town of Paulizza. Nothing certain is known respecting its foundation.

Phigalia was attacked by the Spartans, and abandoned by its inhabitants, in the second year of the thirteenth Olympiad (659 B.C.), when Miltiades was archon of Athens. The Phigalians consulted the oracle at Delphi, and the Pythia declared that they could only recover possession of their city with the assistance of a chosen band of one hundred Orestians, who should all perish in the battle. The prediction was fulfilled. One hundred Orestians willingly devoted themselves, and the Phigalians were re-established. Their heroic deliverers were buried in the forum, and funeral games were celebrated annually in their honour. (Pausanias, vii. 36. 41.)

PHIGALIAN MARBLES, a series of sculptures in alto-relievo, preserved in the British Museum, which are so called from having been discovered among the ruins of a temple at the ancient Bassae on Mount Cotylios, not far from the site of Phigalia. The subjects represented in them are the battle of the Centaurs and Lapiths, which occupies eleven slabs, and that of the Greeks and Amazons, in twelve slabs. The height of each is two feet one inch, and the whole length about 120 feet. These reliefs formed a frieze round the interior of the cela, and were elevated about 22 feet from the ground.

Pausanias (viii. 41), describing the edifice from which these marbles were brought, says: 'After that at Tegea, it may be considered the most beautiful of all the temples of the Peloponnesus.' The roof of the building was of stone. It was dedicated to Apollo Epicurius (or the Deliverer), a title conferred upon him because he had delivered the Phigalians from a pestilence.

These sculptures are of various degrees of merit as regards execution; but the composition, expression, and style of art prove that they came from a fine school of design. The evidence of this in the works themselves is confirmed by the history, which has fortunately reached our times, of the temple which they decorated. The name of the architect was Ictinus, the same who, when Phidias was appointed to superintend the various public works carried on at Athens during the administration of Pericles, was associated with Callicrates to erect the temple of Minerva, or the Parthenon; one of the most splendid monuments of the golden age of art. This gives us the proximate date of the execution of the sculptures under consideration. The Parthenon was finished about 437 B.C. The temple of Apollo at Bassae may therefore be attributed to about the same period.

The quality of the design of these reliefs warrants the assumption that the eminent sculptor who directed the decoration of the former great work of Ictinus may have contributed the advantage of his skill by suggesting the fine compositions of the sculptures for his present undertaking. It is not difficult to discern in them the same sentiment and character which pervade the marbles of the Parthenon. This correspondence is particularly observable in comparing portions of the Phigalian frieze with the metopes of that building; see figs. 1 and 2 (Phigalian Marbles), and figs. 6 and 7 (Metopes of the Parthenon), where the same subject,
the battle of the Centaurs and Lapiths, is represented. The same may be remarked with respect to other parts of this fine series, whether it be considered for the energy displayed in violent action (figs. 1, 2, and 4), for grace and tenderness where gentler expression is to be conveyed (figs. 3 and 5), for playful flow of lines (as in groups in figs. 3 and 4), or for the just balancing of parts as the means of producing a harmonious whole. Throughout there is the stamp of
careful thought, and evidence of an intimate knowledge of art, combined with a free and bold style. Among the ex-

Quell along the execution of the marble marble, and occupies the space.

exhibited in parts of figs. 3 and 4. The few specimens here chosen for illustration are sufficient to show the claim these marbles have to our admiration as compositions. The difference alluded to in the merit of the execution may prob- 

ably be owing to the working out of the general design having been entrusted either to pupils or to various and inferior artists, the idea and the compositions alone being furnished by the master-mind.

These interesting specimens of Greek sculpture were dis-

cov ered in the year 1812. They were purchased for the British Museum in 1814, and arrived in England in the following year. The slabs were found, with two or three exceptions, lying on the floor or pavement of the temple, under the identical places they had originally occupied. They were much mutilated, both from the injury they had sustained from their own weight in falling, and from the heavy masses of the building which had fallen on them. They have been put together with great care, the pieces being secured by copper bolts; but in no instance has their integrity been impaired by restorations. For detailed de-

scriptions of these marbles, the reader is referred to the elaborate work of Baron von Stackelberg, 'Der Apollotem- 

pel zu Basso in Arcadian,' &c, Rome, 1826; also Part IV. of 'Description of the Antient Marbles in the British Museum,' and to the 'Elgin Marbles,' published under the superintendence of the Society for the Diffusion of Use-

ful Knowledge.

PHILADELPHIA:CEIÆ form a small natural order of exogenous polypetalous plants, with an inferior ovary, the principal genus being that after which the order is named. [PHILADELPHIUS.] The species are American, European, and Asiatic shrubs of temperate climates, with opposite leaves, distinct styles, and capsular fruit, containing a large number of minute seeds. Their nearest affinity is, on the one hand, with Myricaceae, from which they differ in having separate styles, dotless leaves, and albuminous seeds, and on the other with Saxifragaceae, from which they strictly inferior fruit, opposite leaves, and parallel styles suffi-

ciently distinguish them. Many of the species, especially in the genus Deutzia, are clothed with beautiful stellate hairs, which form excellent opaque objects for examination with the microscope.
for architecture or site. In 1833 there were 9 Protestant Episcopal churches, 4 Roman Catholic, 19 Presbyterian, 1 Scotch Presbyterian, 10 Methodist, 3 Reformed Dutch, 6 Baptists, 5 German Lutherans, 6 Quakers, 1 Free Quaker, 1 Congregationalists, 2 German Reformed, 2 Universalists, 2 Synagoge, and one Unitarian, 1 Moravian, 1 Menonist, 1 Swedish Lutheran, 1 Mount Zion.

In literary institutions Philadelphia ranks perhaps higher than any other city in the United States. The Philadelphia Library has a large and varied collection of books, which is rather handsome, was erected in 1790. A marble statue of Franklin, executed in Italy, is placed over the front door. The library contains 45,000 volumes. The American Philosophical Society, and the Franklin Institute, distinguished literary men in all parts of the world. The library contains upwards of 10,000 volumes of scientific works. The American Historical Society has also a high reputation. The Academy of Natural Sciences possesses a library consisting of upwards of 6000 volumes. The Philadelphia Athenaeum, established in 1814, has a library of about 6000 volumes, and a reading-room in which 70 or 80 newspapers of the United States, as well as English, French, and other foreign journals, are published. The Pennsylvania Museum has an excellent collection of stuffed quadrupeds and birds, and possesses the most perfect specimen of a mastodon in the world; it is nearly complete, and so large that a man standing on his head cannot place it by its side appears small. [Mastodon, p. 5.]

The University of Pennsylvania is distinguished for its medical school. The new halls, built in 1830, are spacious and commodious. The Jefferson Medical College has also a spacious hall. The Pennsylvania Academy of Fine Arts has a handsome rotunda with a dome. There are several galleries of paintings and statues, which include sculptures by Canova and Chantren, as well as pictures by the best masters.

The first newspaper published in Philadelphia, entitled 'The American Weekly Mercury,' was printed on a half sheet of pot paper, bearing date December 22, 1719. The subscriber's name was Craven John, l,728; its title was 'The Universal Instritor in all the Arts and Sciences, and Pennsylvania Gazette.' Before the end of the first year it fell into the hands of Franklin, who was long connected with it as joint or sole proprietor. This paper, under the abridged title of 'The Pennsylvania Gazette,' was continued till within the last fifteen years, having been for a considerable time the oldest newspaper in the United States.

There were 11 newspapers published in Philadelphia prior to 1800; four of them published regularly early as 1808, and we believe the same number still continues. The weekly newspapers vary from 15 to 20. There are 8 or 10 monthly publications, and 4 quarterly.

There are three theatres in Philadelphia; the one in Arch Street is a handsome building, with the front and columns of white marble.

The markets are admirable, particularly one long range in High Street, which is a pattern of perfect cleanliness and neatness.

There are four prisons. The system of solitary confinement was commenced in the Eastern Penitentiary, a building with lofty castellated walls and towers, loop-holed windows, portcullis, and ponderous iron-bound gates; but a new prison has been built which is more suitable for the purpose. The centre is a rotunda, which is used as a watch-room. From this run long passages so contrived that, by means of echoes, every sound may be heard from the most distant part, the doors being closed; and are so separated that communication between the inmates is impossible. Each cell is eight feet wide, twelve feet long, and sixteen feet high. Outside the cell is a yard eight feet wide and twenty feet long, surrounded by a high wall, where the prisoner is permitted to walk. From the passages, through small openings, everything that is passing in the cells may be seen. The prisoners are kept emaciated, but the vials of the penal institution by the term of imprisonment has expired, which may continue for years. It has been stated that a prisoner, once released, has never exposed himself to the risk of being committed a second time to the walls of this prison, which, if not true, is very near so. For the amount of the mode of treatment and its results, see Miss Martineau's 'Retrospect of Western Travel, vol. i.'

The works for supplying Philadelphia with water are at Fair Mount, near the city, in the eastern bank of the Schuylkill. The project for supplying the city with water by means of steam-engines having failed, after having been persevered in at an enormous expense for upwards of twenty years, in 1819 the present simple and efficient machinery, a 1,600 horse-power long, was thrown in a sloping direction across the Schuylkill, so as to be exposed to the force of the current. There are eight water-wheels, which can raise nearly seven millions of gallons a day into the reservoirs on the summit of a hill 100 feet high, and 300 feet in diameter, near the highest part of the city. The reservoirs can contain 20 millions of gallons. The water is conveyed to the city in pipes. The expense is very trifling, and the supply far better than either of the other two.

A wooden bridge of a single arch, of the large span of 340 feet, crosses the Schuylkill near the waterworks. There is a second wooden bridge, about a mile lower down, which consists of three arches supported on stone piers.

The fire-engine establishment is worthy of the highest admiration. There are thirty engine companies and sixteen hose companies, which latter supply the fire-engines with water. The firemen consist generally of young merchants and tradesmen, and are volunteers. Each member pays a certain sum on his admission, and a small annual subscription; and a fine is imposed upon any member who attends without his waterproof dress. The institution is kept up with an enormous public subscription, and is rendered admirable with a promptitude which raises the astonishment of all strangers who happen to witness an instance. About 5000 dollars are annually distributed to the different companies from the funds.

The manufactures of Philadelphia are considerable, especially the warping-mills; there are two shot-towers, and there are manufactures of nails, leather, hardware, etc. A great trade is carried on up the Schuylkill and Lehigh, in conveying the produce of the coal by the latter river, and the coal is very abundant. One hundred miles distant, though the coal in summer is seldom under seven dollars a ton, and in winter as high as eleven dollars. It has almost superseded the use of wood. The coal is chiefly anthracite; it has a high density, does not blaze, and requires bituminous coal to be mixed with it, which is generally imported from Liverpool.

The municipal government of the city proper is vested in a mayor, a recorder, fifteen aldermen, a select council, and a common council. The recorder and aldermen are appointed by the governor of the state, and hold their offices during good behaviour. The mayor was chosen annually by the two councils and citizens, the last till 1826, when the legislature passed an act authorizing the councils to elect him from the body of the citizens. The members of the two councils are chosen annually. They serve gratuitously, sit in separate chambers, and each body has a negative on the other. The acts of the mayor, the recorder, and aldermen, or any four of them, of whom the mayor or recorder must be one, constitute the mayor's court.

The district court of the city and county of Philadelphia has three judges, one of whom is the president. Each judge has a salary of 2000 dollars a year.

The city proper sends seven representatives and two senators to the state legislature.

Stephen Girard, a Frenchman, who from a humble origin became a banker in Philadelphia, left nearly the whole of his large property towards beautifying Philadelphia and New Orleans, and to establish a college in the former city which should bear his name. He bequeathed two millions of dollars for establishing the college, the income of so much of it as remained unexpended to be employed in maintaining as many poor orphans of white parents as it was adequate to. The buildings of the Girard College were erected in 1834, and are now probably nearly completed. The whole of the buildings are of white marble.

The river Delaware, in front of the city, is about a mile wide, but the wharfage on either side of the city extends nearly the whole length of the city, and somewhat impedes the navigation. Both the Delaware and the Schuylkill are frozen over during winter months, which are carried for freight down the Schuylkill by carpenters' barges. A portion of the navy of the United States is stationed at the southern extremity of the city, and ships of the largest size are built. The Delaware is navigable for steam-boats and small vessels as high as Trenton.
of the 53 British vessels above mentioned, 3 were from London, with cargoes valued at 8600l, consisting of iron, salt, coals, &c.; 2 from Bristol, with cargoes valued at 14,160l, consisting of railroad in such a manner as to allow the further purchase of glass, copper, &c.; 9 from Londonderry, with cargoes valued at 3372l, consisting of salt and provisions; 19 from St. John's, New Brunswick, with cargoes valued at 2064l, consisting of salt, plaster, fish, &c.; 20 vessels were from Falmouth, and 3 back to St. John's with provisions valued at 16,468l. The rest were generally single vessels from various places.

Philadelphia was founded by William Penn in 1683. On the 4th of September, 1774, the members of the first Congress assembled at Philadelphia, where they adopted the Declaration of Rights, which may be regarded as the precursor to the Declaration of Independence, which was proclaimed from the Philadelphia Hall on April, 1776. Congress continued to meet at Philadelphia till the close of the autumn in the same year, when the approach of the British compelled them to retire to Baltimore. The British forces obtained possession of the city on the 26th of September, 1777, and occupied it till the 18th of the following June. The city remained uninjured during the remainder of the war. It was the seat of the federal government till the year 1800, and the capital of Pennsylvania till 1799.

(Philadelphia. United States and Canada: Cooke's Subaltern's Furlough: Encyclopaedia Americana.)

PHILADELPHIA. [LYDIA.]

PHILADELPHUS, a genus of plants of the natural family Iridaceae, which is now unknown, mentioned by Athenæus, but was applied to the present genus by Bauhin. Philadelphus is characterized by having a calyx with an obovato-turbinate tube and a 4-5-partite limb. Petals vary in number from 4-5. Stamen, 20-40, are free, shorter than the petals. Styles 4-5 united together, or more or less distinct. Stamens 4-5, oblong or linear, generally distinct. Capsule 4-5-seeded, many-seeded. Seeds dust-like, enclosed in a membranous aril, oblong, and fringed at one end.

The plants consist of shrubs with white pedicellate flowers arranged in a corymbose cyme, in a paniculike manner, or sometimes in the axis of their leaves, supported by bracts. The greatest number of species are indigenous in North America, whence they have been introduced into the shruberies of this country, to which they form a highly ornamental addition. A species has also been discovered in the Himalayas, at elevations of from 9000 and 7000 feet, of which there are two varieties, sometimes considered distinct species. P. tomentosus being apparently only a more advanced state of P. trifolius. The best known species however is P. coronarius, commonly called Syringa, which is so easily cultivated, and found in most gardens. It is supposed to be a native of the south of Europe, but it has hardly ever been found in a wild state, and even in these few cases it may have escaped from cultivation. As one species has been found in the Himalayas, there is no reason why other species should not exist still farther to the north-west, as in the Hindoo-kosh, and that the Syringa may be found to be one of those plants which was in early times introduced from some part of the Persian region of Botanists into the soil of Europe.

PHILARETUS (φιλαρέτος), the reputed author of a short treatise 'De Pulibus,' which is written in Greek, but of which only a Latin translation has hitherto been published. Nothing is known about his life, nor the time when the author is, it even being uncertain whether he is the author of the work in question, as it is sometimes attributed to Philotheus and sometimes to Theophilus Protopsatharius. It was written (as the author tells us) for the use of all forming writers, and was directed to the subject of either too superficial or inaccurate or too prolix; but it is of not much value, and seldom if ever ventured to differ from Galen. It consists of ten chapters, and was translated by Albus Theobaldus, and published in Basel, 1540. An English and a German translation is inserted in various editions of the curious old collection of medical works called 'Articella.' The translation by Albus Torinus is to be found also in the second volume of the 'Medicus Artis Princeps,' by H. Stephens, Paris, 1567, fol.

PHILEDON, Cuvier's name for a genus of Meliphagidae. [Meliphagidae, vol. XV, p. 82.]

Of this form, Mr. Swainson, in his 'Classification of Birds,' vol. ii., remarks that the head is nearly bare of feathers, and the neck surrounded with a ruff somewhat similar to that of the Vultures. Their size is nearly equal to that of a jack, and the claws are strong and acute. The same zoologist further observes, that other birds of the same size, one would almost imagine they represented the racoon species.

Mr. G. R. Gray quotes as the synonyms of his genus, Melitoris Certicincta, Lat. Melitornis (Lew.), V. & Phil. and Philod. Cons. with Melitoris Nova Hollandiae (Vieill. Ois. d'or, pl. 57), M. Balgagon, Steph., as the type. (List of the Genera of Birds, 1846.)

PHILEMON, Vieillot's name for a genus of birds (Anthonotheca. t. and v. of the 1st Mest,) placed by Mr. G. R. Gray in his subfamily Meliphagines, which consists of the genera Melitornis (Philedon); Prothalamera, G. R. Gray (Merops, Lat. Anthochera, V. and H., Phil. and Philod., Cons. with Melitoris Nova Hollandiae (Vieill. Ois. d'or, pl. 92); Melitornis, Lew., Phil. and Philod., Cons. with Anthochera Lat., Anthorhynchus, G. R. Gray (Melitrapezus, Vieill, Anthornis, Sw. Parnaritius, Steph., Certa, Steph. andy-type A. melanura, Sparr, Mus. Curt, t 5); the genus at the head of this article, Philermon, Boie (Turdus, Gm., Chloropus, Jard. and Selby, Melitornis, Horst). Zanthornis, Lew., Sw. (Merops, Lat. Melitornis, Lew., Philion, Vieil, Anthochera, V. and H; Anthochera, V. and H. (Corn.)) and Anthornis, Lew., Phil. and Philod., Cons. with Anthophila Lat., Anthocyanis, Gould, Entomyza, Sw. (Gracul, Lat., Philion, Vieil, Gymnops, Lew., Entomyza, Sw., Tropidorchus, V. and H.); and Tropicorhynchus, V. and H. and Anthornis, Lat. of these, Anthonysia is employed in entomology.

The other two subfamilies of Meliphagidae, according to Mr. G. R. Gray's arrangement, are the Myzomelinae (subfamily 1) and Manurhinae (subfamily 2). The Myzomelinae consist of the genera Myzomela, V. and H.; Acanthorhynchus, Gould; and Glyptiphila, Sw.

The Manurhinae comprehend the genera Pectorolanthus, G. R. Gray (Plectochryus, Gould); Manurhina, Vieill.; Pheodetes, V. and H.; Eiderius, Sw.; Melitops, Vieil.; and Entomophila, Gould.

Pectorolanthus had been already used in ichthyology.

PHILEMON (φιλήμων), a writer of the new comedy. He was born at Syria, according to Strabo (xv., p. 671, ed.), or at Syracuse, according to Suidas (Philemon). Philemon began to exhibit comedies a little earlier than Menander, and before the hundred and thirteenth Olympiad, that is, in the A.D. 250. (Lucian, Macrob., 25), and died in the reign of the second Antinous, son of Demetrius; he must consequently have been alive subsequent to A.C. 283. He is said to have written 100 comedies, of which Fabrius, in his "Bibliotheca," (vol. ii., p. 55, ed. Charles) has preserved the titles of fifty-three. Of these comedies, fragments only have come down to us, which are usually published with those of Menander, of which the best edition is by Meineke, Berl., 1823. It seems possible that some of these plays may exist; at least there is evidence that some if not all of them were in existence in the seventeenth century. (Journal of Education, vol. 1, p. 186.)
Philemon was the great rival of Menander, and was considered superior to him by many of their contemporaries; but posterity, as Quintilian informs us (Instr. Orat., x. 1, p. 222, ed. Bnipoti), regarded him as inferior to Menander. From the nature of his plays, Philemon appears to have closely resembled Menander, of whose style, and of the new comedy in general, an account is given under MENANDER.

There is no record of Philemon having written comedies. (Athen., vii. p. 291, E.) Suidas says that they were fifty-four in number.

There is extant a grammatical work entitled 'Lexicon Technologicum,' written by a grammarian of the name of Philemon, who probably lived in the twelfth century of the Christian era. This work is divided into eight books, according to the eight parts of speech, which are respectively treated of in each book. The Greek text of the number by Burney, Lond., 1812, 5vo.; but a more accurate edition, with valuable notes, was published by Osann, Berlin, 1821.

PHILEMON. EPISTLE TO. Philemon was a man of distinction, if not a prebendar, of the church at Colossae, and was probably converted from heathenism by St. Paul. Theodoret, who wrote at the beginning of the fifth century, says that in his time Philemon's house was yet standing. He was the disciple of Diognetus, who was a native of Colossae, and died to Rome, where he met with St. Paul, a prisoner there, about A.D. 62, and through him he became reformed. St. Paul then wrote the 'Epistle to Philemon,' and sent it to Colossae by Onesimus, recommending him to the kind consideration of his master; which still remains, sinews, to this day. This was his penitence, how exalt a Christian he was, how much he had won the affection of his spiritual father, and how worthy therefore he was to be regarded henceforth by Philemon as a brother rather than a slave, and adding the expression of confidence in the readiness of Philemon to receive Onesimus even more heartily than he was desired. The epistle of St. Paul to Philemon furnishes a beautiful specimen of Christian authorship, in the style and manner of the writer. The Greek original evinces extraordinary skill in the choice and arrangement of words; so that any reader who has well studied the other Pauline epistles, would conclude this epistle was undoubtedly St. Paul's. Moreover, there is all the historical evidence that can be required to prove it a canonical book.

Onesimus is said by Jerome and others to have become at length a bishop, but whether of Ephesus, as Grotius thinks, or of some other place, is uncertain.

The Epistles mentioned in the epistle is supposed to have been Philemon's wife, and they are said to have been both stoned to death under Nero. In the calendar of the church of Milan, St. Philemon and his wife are named as such. As to saints, as does also the name of Onesimus, the two former being commemorated November 22, the latter February 16. (Theodoret, On St. Paul's Epistles; Fabricius, Bibliotheca Graeca et Romana, sect. iv. chap. 38.)

PHILÉ, or PHILÉ (MANUEL, LEONI, PELÉ, or Φίλη, a native of Ephesus, to be distinguished (according to Fabricius, Bibl. Gr.) from four other persons bearing the same surname. As his work is dedicated to the emperor Michael Palæologus the younger, he must have lived about the beginning of the fourteenth century. He was born of poor parents, came at an early age to Constantinople, became one of the pupils of George Pachyma, and made great progress in the course of his studies. He, being afterwards offered to the emperor by some expressions made use of by him in one of his works, called 'Chronographia,' which is no longer extant, and was thrown into prison. He is supposed to have died somewhere about the year 1340. He is known chiefly as the author of a work titled 'Liber Inscriptionum,' 'De Animalium Propriae,' written in a sort of barbarous Greek iambics, called 'versus politicus.' (See Is. Vossius, De Poematum Cantu et Viribus Rhythm., Oxon, 1672, p. 21, sq.) It is taken almost entirely from 'Alfian's 'Natural History,' and full of the most absurd fables. It was first published at Venice, 1523, 8vo, Grace, by Arcensius, archbishop of Mon- tefeltro, who dedicated it to the emperor, but no value was attached to it. It was reprinted at Naples (Napoli di Maliana). An edition was published at Leipsig, 1574, 4to. (or, with a fresh title-page, Heidelberg, 1596). Gr. et Lat., by Bersmann, in which the Greek text was altered in a very arbitrary manner by Camerarius, who had persuaded himself of the existence of numerous false quantities that he found in the verses were merely the mistakes of the transcribers. L. Corn. de Pauw's edition, Traj. ad Rhen., 1730, 4to, Gr. et Lat., is augmented by some fragments taken from a MS. in the Bodleian Library at Oxford, which Fabricius had before his death, translated. Great Advantage was made of this edition, and was severely criticized by D'Orville, in the sixth volume of Burmann's 'Observationes Miscellanea.'

An edition of the other poems of Phile (some of which at Z&uv 1952 have been inserted in the 'Lexicon Technologicum,' published, Lips. 1768, 8vo, Gr. et Lat., by Wernsdorf, with notes and an excellent preliminary dissertation on the Life and Works of Philes. The longest poem in the volume is 'Lusus,' the name of nearly the same barbarous kind of verse, in the form of a dialogue between the emperor and the city of Constantinople, which he designates by the name Noic, mena. It is composed in praise of Joannes Canaceuseus, who was afterwards emperor, and in it is introduced a personification of his surname. The author of the Epitre, Fortitude, Justice, Temperance, Truth, Memory, Piety, Clemency, Sagacity, Rectitude, Continence, and Modesty. The other poems consist of epigrams and various other pieces, together with one of nearly four hundred verses on the Elephant, addressed to an emperor named Leo, which (as no emperor of that name was contemporary with Phile) probably belongs to some other person. (Miscell. Observ. in Biblioth. Soc. Rerum Nat. ex Fabricio, vol. ii., tom. iii., p. 422.) Two other short poems, in the same metre as the preceding, and in the first volume of Cramer's 'Anecdot. Graec. Parisiens.' p. 43. Oxon. 8vo. 1839. Wernsdorf gives, in his 'Preliminary Dissertation,' a list of several works by Phile, some of which still remain. Among these, he alludes to a work by Phile, which he designates by the name Noic, mena, but he was not able to consult Wernsdorf's 'Dissertation.'

PHILÉTAS, a grammarian and poet of the island Cos, flourished in the times of Philip and Alexander the Great, and was preceptor to Ptolemy Philadelpus. He wrote epigrams, elegies, and other poems, and died of emaciation brought on by excessive study. (Suidas, Lexicon.) Fragments of two other poets were edited by Bachius, 8vo, Hallis, 1829.

PHILIDOR, ANDRÉ, a French dramatic composer and eminence in his day, but better known out of his own country as a most distinguished and unrivalled chess-player, was born at Dreux in 1726. His grandfather was musician in ordinary to Louis XIII.; his father held the same office, and his uncle established, in 1726, the famous Concert Spirituel. André was admitted at the usual early age as a chorister, and chorister, in the chapel of Louis XV., and studied under Campers, Maître de la Chapelle. In 1737, when he had only completed his eleventh year, he produced a motet for a full choir, for which the Grand Monarque designed to give a prize, but no one was thought worthy of the reward. This met with no acknowledgment of a more solid kind, for after quitting the chapel on his voice changing, he subsisted for some time by copying music—a drudgery to which Roussel was obliged to submit—and in giving a few les- sons. But all at once his talent for the game of chess, in which his proficiency was so great, that he sought to profit by his skill, and in 1745 commenced a tour in Holland, Germany, and England. This also enabled him to improve his knowledge and taste in music, by hearing the best works of the great masters. He tried his strength as a composer in London in 1738, by setting Congreve's Ode to Harmony, which Handel heard, and approved his character, but thought him defective in melody. Chess however had occupied more of his thoughts than his avowed profession, and he had previously, in 1749, published his Analysis of the Game of Chess, for which he obtained a great list of subscribers, and his reputation was established. This work gives several games, with notes explaining the reasons for the moves; and thus it is the most useful of all books for those who study chess. In 1754 he returned to Paris, and devoted himself wholly to his profession, and was most successful in it. He held in high esteem the king thought too much in the Italian style, and thus his effort to obtain the appointment of Maître de la Chapelle was frustrated. Four years after this he turned his atten- tion to music, and succeeded in writing some of the most famous works, most of which proved eminently successful, inasmuch that M. de Laborde, in his voluminous Essai sur la Musique—a work to which we are indebted for most of the foregoing—does not hesitate to pronounce him one of the greatest of French composers. The author of the 'Diz-
tientiaire des Musiciens considers him to have been, toge-
ther with Duni and Monsigny, the joint father of the Opéra
Comique, but adds that, though he was a profound har-
corder, he was happy in it only in youth.
In 1777 Philidor reprinted his treatise on chess, consid-
erably augmented. In 1779 he produced at Free-Masons' Hall, in London, the Carmen Seculare of Horace, set to
music, composed in 1766, with the mother of his cheerless
brother, which it was, nevertheless, he had written in imitation of the antient music, though such had never been his intention, and some disap-
pointment was excited in many who expected a revival of
those miraculous effects, in which a first-rate author of
entertainments was published in 1768, in a splendid volume in
dedicated to Catherine of Russia; and
as the work is now before us, we are enabled to corroborate
what Dr. Burney, has said of it;—that the choruses are after
the fashion of the English, and the air of the same kind
as Gretry's comic operas, many of which, particularly
Gretry's, would be elegant and pleasing music anywhere.
It was again performed, under the composer's direction,
in 1768, at an entertainment of a mixed kind given by the
Knights of the Bath at the Pantheon. From that period
Philidor seems to have passed much of his time in London,
chiefly occupied by the game of chess, at which he played
at Pascolo's (now the Albin Club) in St. James's Street,
which he always was so expert at that he was asked to be
his exploit, on the payment of a small fee. It was there he
exhibited his marvellous powers, by playing three games,
against different adversaries at different boards, all in
the same day, which ensued two months after his having
played two games, blindfolded, simultaneously, against very
expert players, and was victorious.
His health now rapidly declining, he applied for a pass-
porth to return to his native country, but was refused, having
been, most unjustly, proscribed by the French government
as a suspected person. This affected him deeply; his grief
admitted of no alleviation, and he died in London, in 1795.
Philidor was a very worthy and amiable man; but it was
the age of twenty-three years to a throne which, since
the death of his father, and during the reigns of his two
elder brothers, Alexander and Perdiccas, had been shaken
to its foundation by foreign invasion and civil war. Fortu-
nately for the independence of his kingdom, the young
monarch was endued with talents and energies of the
highest order; and a residence during his boyhood at Thebes,
whither he had been sent as a hostage in the best days of
the republic, while the celebrated Perdiccas and Epe-
monndis were in power, had obtained for him all the advan-
tages of a liberal Greek education. On his accession to
the throne, his inheritance was overrun by the victorious
Illyrians, who had defeated and slain his brother Perdiccas;
his enemies were supported by the power of Phocis, and the people of Macedonia were dispossessed of accumu-
lated national calamities. But his courage and eloquence
revived the hopes of his subjects; and his military skill and
activity enabled them with their qualities were successfully exerted in the field, negotiations
and bribes were as artfully employed to induce the support-
ers of the rival claimants to abandon their cause; and
Philip finally not only repelled the Illyrian and Epiro-
nian invaders, but also extended his territory, and extended his own dominions at their expense.
He subsequently further strengthened himself by a marriage
with Olympias, daughter of the king of Epirus, who
became a republic. The marriage was a great, but whose temper and conduct made her so little agreeable to his husband, that
he finally divorced her.
From the period of the full establishment of his authority
over his subjects, he was still credulous of those who
performed the design, which he then leisurely pursued and ulti-
mately accomplished, of destroying the power and influence
of the Athenian people on the northern shores of the
Agean Sea. As his projects, both on the present occasion
and a hundred years before of his predecessor, to make
that republic, the state of affairs at Athens throughout
his reign requires some detailed notice.
After the general peace which followed the battle of
Manitinea and death of Epaminondas (a.c. 369), Athens
had again become the most prominent state in Greece.
The naval successes and moderation of Timotheus and a
few other officers of similar character had won her the
public respect; and the people of the Aegian islands and
the Aegean coast to a great part of the Epirus, had now
resumed their relations to her as subject allies. She
had thus nearly recovered the naval supremacy lost by the
fatal termination of the Peloponnesian War: but this brief
recovery was of short duration. The innovation of the
former habits of oppression towards her allies; and these
produced (a.c. 356) the Confederacy or Social War, by
a league of some of the dependent islands and towns against
her, which raged for years, and ended in the loss of
sovereignty. Philip ably took advantage of the distraction
of Athens in this contest to reduce or win over in succession
Amphipolis, Pydna, Potidæ, and other towns on the north-
er shores of the Aegian, until in those parts Mæonia alone
remained; but the Athenian interdict on the Thracian conquests in
Thrace also gave the Macedonian prince possession of the
gold-mines of Pangerus; and near these he built or enlarged
a city, which he peopled with Greeks from the conquered
island, and named after himself, Philippi. Here, under his
personal inspection, the mines were worked to such advan-
tage, that they produced him one thousand talents annu-
ally; and the gold 'Philips' which he coined served him
in the sequel both to bribe the orators of the Greek
states and to hire the mercenary troops with which he now
openly assailed their freedom.
The ambition of Philip indeed soon taught him to extend
his views of aggrandisement into Greece itself; and, at
least in the next thirty years, to lay the foundations of his
success and realisation for the acquisition of a general supremacy over
the Greek states, the first occasion for interfering in their
domestic politics was afforded him by the Phocian or
Revolution. There was no more resource to the Phocians,
than to close the contest between Athens and her allies.
The real cause of the persecution of the Phocians was the hatred
with which that people had inspired the Thebans by refus-
ing to join them in the late war against Sparta. To this
source of political enmity were added some uncertain mo-
tives of personal offence between individuals of the
neighbouring communities; and, moved by such passions of
civil and private revenge, the Thebans rashly excited a
commotion which was doomed eventually to bring destruc-
tion upon their own state, as well as to annihilate the
general liberties of Greece. Arming themselves of their
influence in the Amphictyonic Council, of which they hoped
to meet the, the absolute control, as well as the command
of the temple of Delphi and its treasures, by destroying
the Phocians, they accused that people of having cultivated
lands which had been devoted to the Delphic god. The
Phocians were found guilty by the complaint Amphictyons,
and condemned to pay a fine of two thousand talents as an
punishment their whole country was declared forfeit to the
god. Perceiving that their only appeal against this iniquitous
sentence must be to arms, the Phocians anticipated their
enemies, and were defeated by them, but supported by Athens and Sparta, they commenced a
sanguinary war with the Thebans and their allies.
During the progress of this struggle, Philip gained a
foothold in Thessaly by assisting some of the Thessalian
nobles, or the Alcmeonids, the ancient allies of Macedon,

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against the tyrants of Phero, who were supported by the Phoecians and their Athenian confederates. The successful interference of Philip in this quarter brought him into opposition with Athens; but the jealousy of that republic was still more excited by his continued machinations against her. The Athenians in conjunction with the people of Methone, to repel these injuries by hostilities, he suddenly appeared before that place, and took it, after an obstinate siege, in which he lost his life. The Athenians, however, received the hitherto his allies, now taking alarm at his ambition, applied to Athens for aid against him; but though the Athenians, moved by the eloquence of Demosthenes, repeatedly sent remonstrances to Philip, he determined to maintain his terms, and, finally besieged and captured Olynthus (n.c. 347). After this event, both the Athenians and the Macedonian prince were equally desirous of peace, and in the following year a treaty was concluded between them. But the ambassadors who were sent to Philip to arrange the terms suffered themselves to be either outwitted or bribed by the artful monarch; and the Phocian allies of Athens were excluded from the benefits of the treaty.

That brave and unfortunate people, who had hitherto maintained the war with advantage, were now abandoned to the mercy of their more numerous and powerful enemies. The Thebans, who were nearly exhausted in the struggle, aspiring to the ambition of their erstwhile enemy, and happy at the discharge of their foreign affairs, hastened to surrender. From Thessaly, passing the defiles of Thermopylae, which had been left unguarded, he marched rapidly into Proper Greece; and, profiting by the misconduct of party leaders, he compelled the thebans general, but not completely successful. The Phocian allies of Athens, who had been induced to surrender unconditionally; the Amphictyons assembled, and decreed that their towns should be destroyed and the inhabitants disarmed and heavily assessed; and their privileges and immunities were almost entirely destroyed. The city of Amphipolis was burnt, and the temple of the river god thus ended (n.c. 346) the Sacred War, which ruined an innocent people and destroyed the little reverence for religion that had hitherto been preserved in the midst of the west. The crisis was now approaching in the great struggle between Athens and Philip, that on the part of the former, was for the independence of Greece, and on that of the latter, for the supremacy of Philip over the state and countries. But the contest was almost as much one of factions at Athens itself, as between the republic and the Macedonian king. The aristocratic party in that city inclined, perhaps naturally, to the side of Philip, through considerations of interest; but the democratic and consequent hopelessness of a successful collision with the power of Macedon, which they either thought useless to resist, or considered not likely to be injurious to their country. The Macedonian king, Philip, with his army, had invested for all the evils of intestine commotions of which they were weary, there remained no cure but a general diversion, headed by Macedon, of the national energies against Persia. Their leaders were the venerable Isocrates and upright Phocion, both patriots of unquestionable integrity, and anxious for the independence of Athens. But it was the misfortune of this party, that its ranks gave shelter to the venal orators, such as Aeschines, Demades, and others, who were undoubtedly in the pay of Philip, and who basely promoted his designs. On the other hand the democratic, or war party, as a modern historian has termed it, ever eager for the licence and plunder which were promised by a success, was at first singularly animated and perspicuous. The personal ambition of Philip, together with the mercenary Chardemos, the conduct of military expeditions was often entrusted. But to this party, through a well-founded persuasion of the ambitious project of Philip, and a generous and patriotic enthusiasm for the independence of his country, had the great Demosthenes attached himself, and a view of the principles upon which he acted will be found in a former article. [Dem.] After the conclusion of the Phocian war, Philip turned his attention for a time again to the northward of Greece, and laboured to consolidate his empire in that quarter by possessing the cities of the Propontis and Thracian Chersones. The Athenians, however, now roused the Athenians to so much alarm and energy, that the then Macedonian attacked and invested Perinthos and Byzantium, a strong armament was fitted out at Athens, which, under the command of Phocion, compelled him to raise the siege of those cities (n.c. 339). This was the most glorious moment in the life of Demosthenes, and the most mortifying check in the successful career of Philip. But the triumph of the great orator and the disappointment of the ambitious prince were alike only momentary; and the event which was the result of the consul's impetuous impulse which could be given to a fickle and divided democracy, without secrecy, unity, or consistency of purpose, and the concentrated power of a monarch of high talent and an unexampled energy, was veiled in the profoundest mystery until they were ripe for execution by adroit ministers, experienced generals, and well-disciplined armies. In the very next year after his repulse from the north, the Athenians were again in arms in Greece itself. He was appointed by the conspicuous Amphictyonic council their general in a new sacred war which they had denounced against the people of Amphipolis for cultivating some devoted lands; and after reducing that city, he suddenly threw off the mask by sending Elateia, the key of Bocotia, at the head of 32,000 veteran troops. The Athenians were filled with dismay; but the eloquence and activity of Demosthenes both animated them to signal exertions, and induced the Thebans, Corinthians, and others to join with Athens in the cause of independence. The numerical superiority of the confederates however, though they fought with great bravery, could not prevail to drive Philip from Greece; and finally his son, Alexander, and the king of Chersones (n.c. 338) for ever extinguished the liberties of ancient Greece.

Nothing was more characteristic of the disposition and policy of Philip of Macedon, than his exploit at the battle of the Granicus, and the march to the assembly of the Amphictyons, near Corinth, where the Greeks were assembled to decide the question of the union of Greece. The Great King, however, was determined to make them an example of his own strength and ambition, and the march of Philip was a complete overthrow of the principles of the republic, which had been maintained by the demagogues of Greece. But in the midst of all this Philip, the great monarch, the hero of the free cities of Greece, the friend and patron of the ancient writers, now imposed a Macedonian garrison upon the subdued city. To the Athenians, on the contrary, he behaved with the greatest clemency, dismissing without ransom those among them who had been made prisoners; granting the republic peace upon very easy terms, the principal condition being that they should send deputies to a general congress of the Amphictyonic states at Corinth. Here the great object of the ambition of Philip seemed to approach its fulfilment. After a short period, however, Philip of Macedon, who had continually inflected upon Greece, was unanimously resolved in the assembly that a national war should be declared against the Persian empire, and that the Macedonian king should be appointed commander-in-chief, with powers to apportion the contingent of each Grecian state.

But when he was making the most active preparations for the great expedition which he meditated, and which his son was going to accomplish, his days were numbered by the hand of an assassin. While celebrating the nuptials of his daughter Cleopatra with the king of Epirus, he was stabbed by a young Macedonian of his own body-guard, Pausanias, whose motive for the deed, as he was himself put to death on the spot, could not be ascertained, but it has been most probably ascribed to personal revenge, on the king's refusal to grant him redress for an intolerable insult which he had received from the queen's uncle.

Thus fell Philip, the last of the heroes of Greece, to whom, in the early age of forty-seven years, and in the full vigour of life and intellect, at the moment when he seemed to be entering on the meridian splendour of his career of glory. The character of Philip of Macedon has often been sketched, like too many other historical portraits, in the spirit of party. A distinguished historian of our own times has depicted all his actions in the most favourable colours, apparently with the object of exalting the general cause of democracy in the conduct of his Athenian rival. On the other hand, the ardent advocates of republican freedom have not unnaturally been led to regard the Macedonian king with strong prejudice as the exemplar of monarchy. All of the principles of the Politeia, it would be difficult to name one worthy of comparison with Philip in the fairer features of his character. His government of his own kingdom must be judged, by the silence of his opponents, to have been mild, just, and popular. Per
sonally kind to his enemies, he was to a singular degree free from that cruelty which was the common reproach of the Greeks of his age: humane, generous, and magnanimous, he often showed himself capable of forgiving injuries, and employing the past, as an instrument of further good, and of success with moderation. It was indeed his boast and his truest glory, that he conquered more by mercy and conciliation after victory than by mere force of arms. His splendid abilities were equally conspicuous as a statesman and a general; and his intellectual tastes for literature and philosophy, for the drama and the arts, were alike refined and passionate. He made his court, therefore, no less the seat of elegance and mental cultivation than it was the school of consummate political science. Though his ambitious schemes as he was unscrupulous in the means which he employed to advance them, is true: he hesitated as little as most politicians at corruption and perfidy. But his ambition was not of a vulgar cast; nor while the conquest of the vast Persian empire was its magnificent project, does he at all seem to have aimed at the internal subjugation of the Greek states, or to have desired more than the supreme authority to lead their free and enlightened confederation against the barbarism of the East. The viscous intemperance of his private life will not bear any comment; but his vices, like his accomplishments, were those of the Greeks, and of the state of society which produced them: his virtues were peculiar to himself, and superior to his times.

The original materials for the life and reign of the first of these two Philes are scattered through the extant orations of Aschines and Demosthenes, the compilation of Diolorus Siculus, and the Lives of Demosthenes and Phocion by Plutarch. Among our modern historians, Mitford has given an elaborate though far too favourable view of his actions and character. The original authorities for the reign of the last Philip are Polybius and Livy.

PHILIP II., was the son of Antipater and Jane, sister of Jesus Christ, and one of the twelve apostles. He was a native of Bethsaida, a town near the sea of Tiberias. After his call to the apostleship not much is recorded of him in the New Testament. He has sometimes been confounded with Philip the Deacon, or Nestorius, or mentioned as a son of the apostle Philip. The latter designation will plainly show that they were quite different persons.

Nicephorus Callistus tells us that in the distribution of regions made by the Apostles for their respective spheres of labour, St. Philip had Syria and Upper Asia assigned to him, with St. Bartholomew; and that having there made numerous converts, he came into Hieropolis in Phrygia, where he succeeded in bringing many of the inhabitants from gross idolatry to the belief and practice of Christianity, on which account he was at length seized by the authorities, imprisoned, and scourged, and then martyred by being hanged upon a pillar, but in what year we are not stated.

The first St. Philip is supposed to haveoha book to St. Philip, which they called his Gospel; but no other sect ever pretended that this apostle left any writings. The feast of St. Philip is observed by the Eastern churches November 27, and by the Western on the 1st of May (Isidore of Pelusium; Nicephorus Callistus; Cave, Lives of the Apostles).
As the reign of Philip II, which fills a long and important period in European history, received its dark colouring from his personal qualities, a slight preliminary sketch of his private character will help to indicate the features of his policy and the events which it produced. He was naturally of a stern and morose temperament; and the austerity of a monastic education, aggravating this constitutional defect, had extinguished in his soul every joyous emotion. As he had been used to compare himself with holy youths and to subject his Frankish youth with religious doctrines, the very sincerity of his belief acting upon a cold heart, a gloomy temper, and a narrow mind, was sufficient to render him obstinately harsh and cruel. In temporal affairs, the despotic principles in which he had been brought up had filled him with extravagant ideas of regal authority; and his father's example had taught him to aspire to universal monarchy. With a spirit of coldness he maintained a limited scheme of worldly ambition; and perhaps conscientiously believing that with his own projects of dominion he was promoting at the same time the glory of God, he pursued without remorse the most inhuman course of religious persecution and civil tyranny.

Philip has therefore truly been represented as a monster of bigotry and cruelty; but it appears unjust to add to these revolting qualities, as some writers have done, the reproach of cowardice. The character of Philip was aslittle formed by circumstances as it would have been impossible to develop his will and mind in any other manner. His nobleness of soul, his love of truth, his deep respect for the sacrosanct rights of religion, his hatred of false pretences, his consistency, his inimitable modesty, and his patience under annoyances, all prove a mind of the highest order. His veneration for God, his unbounded confidence in his consent for all earthly events, and the charitable and benevolent disposition of his heart, made him have a deep regard for justice, which is the parent of every virtue. He concealed his heart with a mask of cruelty, but his heart was of that kind of kindness which is never simple complacency. It is much more likely that Philip, with all his vices, was less at fault in his policy than that he was not guided by any other ideas than an eternal love for his God. He was the only one of his age who had the true idea of the kingdom of God, and was willing to convalesce its ancient boundaries.

Meanwhile Philip diligently applied himself to the extirpation of heresy. He was determined to purify his Italian possessions, both of Milan and Naples, fire and sword, and the sword was successfully employed for this purpose; but the attempt to establish the Spanish Inquisition in the Netherlands, did with the serious results, first provoked a spirit of insurrection (A.D. 1566), which, through Philip's strong desire of his long reign, exhausted his immense resources of men and money, and after the frightful devastation of those fertile and flourishing provinces, for ever tore seven of them from the Spanish monarchy. When Philip found that the government of Margaret of Parma wanted strength to enforce his religious edicts in the Netherlands, he replaced her by the ferocious Ferdinand Alvarez de Toledo, duke of Alva. The administration of this bold man, which, as his sanguinary boast, that in less than six years he had consigned 18,000 heretics to the stake and the scaffold, before his master was compelled, by the failure of his cruel measures, to reduce the penalty of his successor Requesens; the warlike movement, the efforts of his soldiers, and the artifice of Don John of Austria, natural brother of Philip (who had gained for him the great naval victory of Lepanto over the Turks in 1571); and the military genius of him, by the admirable and admirable talents of Philip, the ability and the birth of his descendants, especially of his sons, — were all in succession equally ineffectual to suppress the revolt of the Netherlands. William the Silent, prince of Orange, whose deep eminence Philip had provoked, proved the most able of the leaders, armed under that prince and his son Maurice, they successfully prosecuted a struggle, of which the principal events are related under another head. [NASSAC, HIST OE.]

While the bigotries of Philip were discovering seven provinces of the Netherlands from his dominions, he unexpectedly acquired possession of another kingdom. On the death of Henry, king of Portugal, without issue, Philip as his nephew asserted his title to the succession; and his power easily enabling him to prevail against his feeble competitor, Don Antonio de Crato, his troops, under the Duke of Alva, entered Lisbon, and in two months (A.D. 1580) annexed the Portuguese crown and colonial dependencies.

This acquisition seemed but a step to the universal dominion at which Philip aimed; and in the pursuit of his double ambition of extending his sway and extinguishing the power of the Saracens. His projects for the subjugation of the Netherlands were far from being less formidable. His designs for subjugating both France and England. In the former country, after secretly alloying himself with the queen mother, Catherine de Medicis, and the French, party, for the destruction of the Huguenots, he sedulously and openly supported the Catholic league, under the Guises, against Henri IV.; and it was not until that sovereign, by changing his religion, completed his victories over the league, that the subtle tyrant of Spain abandoned his hopes of reducing France to subjection. His project for the conquest of England was more avowedly proclaimed, and more disgracefully defeated. But it is needless in this place to repeat the narrative, so glorious in our annals, of the destruction of the magnificent fleet of one hundred and fifty vessels of war, which, under the presumptuous title of the Invincible Armada, Philip had equipped for the reduction of this island (A.D. 1588). The manner in which he received the news of the failure of the English enterprise, with hopes by the shipwreck as well as the defeat of his navy, displayed some greatness of mind as well as religious resignation: 'I sent my fleet,' said he, 'to combat with the English, but not to莞m of their perceptiveness.'
Archduke Albert. His haughty spirit was reduced to submit to this measure, as the only remaining expedient for preventing the total alienation of the Netherland from his house. The schism thus formed soon took more decided shape; and the peace of Vervins, which he was compelled to conclude with Henri IV., left that sovereign securely established on the French throne. Philip died in the same year (a.d. 1585), at the age of thirty-two, after prolonged and exorcising suffering, under a complication of dreadful maladies, which he bore with exemplary fortitude and resignation.

Philip II. was four times married. The queen of England, by whom he had no issue, was his second wife. His first was his cousin, Mary of Portugal; and by her he had one son, Don Carlos, whose fate has deepened the sombre aspect of his reign. That young prince, who appears to have been held in so high a estimation and vived by his father's refusal to admit him to a share in the administration of the kingdom, though he had never shown any capacity for public affairs. After giving many proofs of a discontented and disordered mind, he was, on an accusation of holding a treasonable correspondence with the Flemish insurgents, arrested in his bed by Philip himself, at midnight on the 18th of January, 1585, and committed to a prison. In the course of the months he remained in his miserable existence, at the age of twenty-three years, and not without the horrid suspicion that his death had been hastened, through poison or other means, by his father's command. But the authentic version, which we have related, of this melancholy event has the authority of an authentic relation, by calumny and fiction. Writers, who believed or feigned Philip capable of any atrocity, have asserted without sufficient evidence that he was the murderer of his son; and upon this foundation has the supposition been formed for a romantic tale of a mutual and criminal passion between Don Carlos and his father's third wife, the Princess Elizabeth of France, who had originally been betrothed to himself; and whose love, which closed quietly afterwards, is also said to have been sacrificed to the jealous vengeance of her husband. For this charge against all the parties, there seems however to have been no foundation. By Elizabeth, Philip had two daughters, who, together with his son, secured by his fourth wife Anna, daughter of the emperor Maximilian II., were the only legitimate issue which he left. In the midst of his persecuting zeal, he had given one purer proof of his regard for religion; and sacred literature owes an obligation to his memory for the publication of the beautiful Polyglot Bible which bears his name, and which was printed at Antwerp in 1569-72, in 8 volumes, folio.

Philipp III. was a prince, in everything except his behavior, like a churlish and unmitigated scoundrel, and in his behavior the prototype of that of his father. Gentle, humane, and unconquerably indolent, he surrendered himself and the whole management of his affairs, from the very commencement of his reign, to the guidance of a favorite, whom, after his death, the historian, the man of letters, who had been his chief equerry, and whom he raised to the dignity of duke of Lerma. This nobleman, who governed Spain as prime minister with unabounded power for twenty years, was a personage of dignified mien and of a mild and beneficent disposition; but as a statesman, though he wanted neither prudence nor firmness of spirit, he was otherwise of only moderate capacity, and he rendered his administration injurious to the state by his love of pomp and lavish expenditure, and the consequent derangement of the national finances. He was supplanted at last in the affections of his feeble master (a.d. 1618) by his own ungrateful son, the duke of Uceda, under whom the kingdom was not better governed. England and other lands had her husband the archduke Albert, which was ratified by Philip III. immediately after he ascended the throne, the war in those provinces continued with unabated fury, and with indifferent success. The Duke of Lerma, whose advice was to the exhaustion of the immense revenues of the monarchy compelled the duke of Lerma to conclude in his master's name a truce for twelve years with the Seven United Provinces, by which the king of Spain acknowledged them for free and independent states. In the same year, under the plea of that the remainders of the Spanish dominions were expiring, and背上其保存的基督教国王约瑟夫二世，继续其在西班牙的统治，以及在马德里占优势的王位觊觎者。由于菲利普二世的继位，西班牙在欧洲的影响力得到了加强，使其成为五大宗教战争之一的主角。这些战争的起因是基督教国家与伊斯兰教国家之间的对抗，而西班牙作为基督教王国中的一个，成为了重要的参与者。

Meanwhile a dangerous insurrection in Catalonia, provoked by the imprudent measures of that minister, and the revolt of Portugal (a.d. 1640), were added to the distresses of the Spanish monarchy. Olivares announced this last event to his master as a subject of congratulation: 'Sir, the duke of Braganza has had the madness to suffer himself to be proclaimed king of Portugal. His imprudence will bring a consecration of twelve millions into your territories; and defeat to the Spanish crown; but Catalonia, after a desperate struggle of many years, was finally reduced to
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obedience. Olivarez, whom Philip IV, was himself at last compelled to recognise as the cause of these multiplied disasters, was disgraced, and shut up in a priory by order of his nephew Louis de Haro, who however was neither attached to him nor disposed to imitate his measures.

In the following year (a.d. 1649) was concluded the peace of Westphalia, by which Philip IV., for himself and his successors, formally and finally renounced all claim of sovereignty over the Seven United Provinces. The war with France, which still continued for eleven years, and the reverses of which were caused by the sagacity and energy of that prince, under the protecitorate of Cromwell, with France, was little else than one long train of loss and disgrace to Spain; and the peace of the Pyrenees (a.d. 1699), which closed the struggle, was only a temporary truce.

This treaty was also distinguished by the marriage of Maria Theresa, eldest daughter of Philip IV., to Louis XIV. of France, an event which, despite of the solemn renunciation of the French king, was intended to convey the crown of Spain to the house of Bourbon. After this pacification Philip continued his vain efforts to recover the crown of Portugal for some years; and his death, which occurred in 1665, is said to have been hastened through grief at the events which followed by the Portuguese.

He was a prince of some talents, and of upright intentions: but a propensity to pleasure, which Olivarez had artfully encouraged, immersed him in indolence; and these habits enervated his understanding, and debilitated his body as well as his mind.

He left one son, who succeeded him under the title of Charles II., and died childless; and two daughters, Maria Theresa, married to Louis XIV., and Margaret Theresa, who became the wife of the emperor Leopold.

Philip V., king of Spain, was great-grandson of Philip IV., through his daughter Maria Theresa, grand-daughter of Louis XIV., of France, and second son of the dauphin. He was born in 1683, received the title of duke of Anjou in his infancy, and was early by the last testament of Charles II. to the throne of Spain and the Indies in the then 1700. The circumstances which attended this inheritance, and produced the memorable war of the Spanish succession, belong to the history of the church, and are too numerous to be mentioned here.

The main events of his life have been already related. He was succeeded by his eldest grandson, Philip V., his son's son, who died in 1746, leaving only a surviving son, his first wife, who succeeded him under the title of Ferdinand VI., and a numerous family by his second queen, one of whom, Don Carlos, afterwards ascended the Spanish throne as Charles III.

(For these reigns of the five Philip's of Spain we have consulted L'Art de braver les Dates: The Universal History (vols. xvii., xviii.); Schiller, Geschichte des Abfalfe der Niederlandes; Watson, History of the Reigns of Philip II. and Philip III.; Cave, Memoirs of the Kings of Spain of the House of Bourbon, &c.)

PHILIP OF ORLEANS, Regent. [ORLEANS, House of]

PHILIPPE I., king of France, son of Henri I., and third both in descent and succession from Hugues Capet, founder of the third dynasty of France, was born a.d. 1053, and succeeded his father a.d. 1060. His mother was Anne of Russia, daughter of William I. On his death-bed, Henry committed the care of the child to business, and the nomination of the government to his brother-in-law, Baudouin or Baldwin, count of Flandres. Baudouin did little more till the time of his death (a.d. 1087) than occasionally visit his ward, who was brought up sometimes at Paris, sometimes at one or other of the royal castles. The death of Baudouin removed from Philippe the restraint which his station and inexperience required, and he plunged into a series of the most disgraceful character. The monies of indulgence were supplied from various sources, especially from the sale of ecclesiastical benefices and dignities, which subsequently drew upon him the hostility of the clergy, and demanded sufficient energy vigorously to struggle against the growing spirit of ecclesiastical domination, his necessities and his profligacy prevented his entire submission to the claims of the popes, who desired to engross to themselves all the higher ecclesiastical appointments.

Philippe was engaged, not long after the death of Baudouin, in a war with Robert le Frison, or the Frisian, who had usurped the county of Flandres from his nephew Arnoulpe, the grandson of Baudouin. The latter and indecorous proceeding, was the object of great public execration, and concerted by Robert near Cassel: the young Count Arnoulpe was killed, and the king only saved himself by a hasty and inglorious flight (a.d. 1071). In a second attack to subdue Robert, Philippe was taken prisoner, and sent to Normandy with him, and married Bertha of Holland, his step-daughter.

From 1075 to 1087, Philippe was engaged in occasional hostilities with Guillaume, or William, duke of Normandie, and king of England, which kingdom he had acquired by conquest (in 1066) during Philippe's minority. But the war was languidly conducted, on the part of Philippe incommoded, and on that of William from full occupation in other quarters, and perhaps from the feudal sentiment of respect for his suzerain. Philippe however encouraged the discontented vassals and rebellious children of William: and the contest did not finally terminate until the death of the Conqueror (a.d. 1087). He had become excessively extravagant, and a coarse jest of Philippe's hit him so hard, that he would be put to bed," excited his indignation. "When I go to be buried at St. Genevieve, I will offer a hundred thousand tapers," was the reply of the angry veteran. He entered the territory of Vexin, and stormed Mantes; but a former portion of Philippe's domain being proved moral, and relieved Philippe from his hostility.

The year 1092 was marked by the most important incident of Philippe's life. He had become weary of his wife Bertha, by whom he had four children, and retired from her in the castle of Montreuil, which had been settled on her by way of dower. He now married Bertrade, wife of Foulques le Riche, count of Anjou, who, dreading her husband's inconstancy, forsook him and took refuge with Philippe. This marriage was so glaringly inconsistent, not only with good morals and decency, but with ecclesiastical law, that
it was, with difficulty, that any bishop could be procured to dissolve the union. It involved Philippe in two wars, one with Robert le Frison, who took up the cause of the repudiated Bertha; and another with Foulques of Anjou, who sought to recover Bertrade. The church also took up the matter, and Philippe was driven from its councils, and subjected to silence and threats of excommunication. In return he threatened the bishops, and even subjected one of them to a short imprisonment. Philippe had obstinacy enough to retain Bertrade, but not strength enough to silence the bishops. Some of them indeed embraced his cause, after the death of his injured wife Bertha (a.d. 1094), and, in a council held at Reims, showed a disposition to attack the bishop of Chartres, his wife's archbishopric. But the majority of the bishops, in a national council at Autun, excommunicated both Philippe and Bertrade (a.d. 1094). The pope, Urban II., desiring a peace, threatened to deprive him of the liberties of wearing the ensigns of royalty, and to prevent the celebration of public worship in the place where he was. He mediated the exercise of such power as he possessed, and was allowed to perform his devotions in the imperial chapel.

Near the close of the eleventh or the beginning of the twelfth century, Philippe, being engaged in hostilities with William II., the Red, who then held Normandie, associated with Bertrade, and the powers of royal and uniform importance were united. In a.d. 1106, then eighty or twenty years of age, afterwards known as Philippe le Gros. The activity and good conduct of the prince gradually raised the royal power from the corners of the state. It had fallen, when he married the jealousy of his step-mother Bertrade. The court was divided; Louis was charged with seeking a pretext to have Bertrade murdered, and Bertrade practised on his life by poison. Neither the divisions of his family nor the power of the church could prevail on Philippe really to put away Bertrade, or to deprive her of the title of queen. A declaration of penitence, an engagement no longer to regard her or live with her as a wife, which engagement he afterwards openly violated, were the condition on which the church, and afterwards the son and suesing his son, took (a.d. 1104). Bertrade afterwards succeeded in reconciling both herself and Philippe with her former husband, Foulques le Rechin, and the degrading intercourse of the two husbands of this infamous woman is described by Sia- mundi after Ordoerio Vitalis. The remaining years of Philippe were marked by little except the intrigues of Bertrade for the advancement of her children by both marriages. In 1106, Constance, daughter of Philippe by his first wife, married Boemond, or Bohemond, the Norman, prince of Antioch, who had come to France in discharge of a vow, and to raise recruits for the Holy Land.

Philippe died at Melun, of premature old age, the result of a life of wicked excesses, and in the forty-eighth year of his reign, and was succeeded by Louis VI. He was a worthless character, combined with the low state of the royal power, rendered him a spectator rather than an actor in the events of his reign. France possessed at this time little national unity, and the history of the time is the history of the great nobles and of the provinces, rather than the history of the king or the kingdom. From the time of Philippe the royal power revived. The activity of Louis had given an impulse to it even in his father's time, and his activity and that of his immediate successors gave permanence to the movement.

PHILIPPE II. (better known as PHILIPPE AU- GUSTE, from which he is thought to have derived from being born in the month of August), was the son of Louis VII., surnamed Le Jeune, or the Young, and Alix, daughter of Thibaut le Grand, count of Champagne, his third wife. He was born a.d. 1155, and was crowned at Reims, when little more than fourteen years of age, in his father's lifetime, upon whose death, in the following year (a.d. 1180), he came to the throne. He had however exercised the sovereign power from his majority, his father's death, and one of his earliest acts was a general persecution of the Jews, whom, when assembled in their synagogues on the Sabbath, he caused to be surrounded by soldiers, dragged to prison, and despoiled of all the gold and silver that was found in them, and also publicly punished. All debts due to them were to be annulled on condition that the debtor should pay to the royal treasury a fifth part of the amount due. Other acts of persecution followed, and in

1181, the Jews were commanded to dispose of all their movable property and quit the kingdom for ever; all their real property was confiscated to the crown, and their synagages were ordered to be converted into Christian churches. The intercession both of nobles and ecclesiastics, for whose good offices he rewarded them by grants, failed of effecting a stay to the proceedings. He was, in fact, pursuing an unwise policy, for he had undertaken to fulfill an impious oath, and to avenge a personal wrong by an infliction of heavy damages on the Jews. It was not until 1185, that he was again enabled to return to the sacred temples to which he was a devoted worshiper. The pride and ambition of Philippe led him, even before his father's death, to embroil himself with the queen his mother and her four brothers, the counts of Blois, Champagne, and Sancerre, and the archbishop of Reims, who had taken advantage of the weakness of Louis VII. to govern France in his name, and who concluded that it belonged to them to direct the administration of a minor king. The good offices of Henry II. of England availed the dispute. Philippe married, before his father's death, Isabella, niece of the count of Flanders, his godfather; and was, with her, crowned a second time at St. Denis, by the archbishop of Sens. This marriage was one of the causes of his bloodshed with Henry of England. In 1188, he inherited the crown of Flanders, as well as most of the other great vassals of the crown, who united to oppose his rising power; but the good offices of Henry of England again restored peace, and in 1189, Philippe's forces entered some of the streets of Paris to be paved. [PARIS.] After an interval of three years (a.d. 1185), war between Philippe and the count of Flanders again broke out, and ended, after a short campaign, by a peace which abrogated all the former cessions and resources of the king. A struggle with the duke of Bourgogne (a.d. 1186) also terminated favourably for the king. Hostilities with Henry II. of England followed, and were attended with success; and that powerful monarch, being about to enter the island of Jersey, was met by the monks in league with his enemy, died at Chinon (a.d. 1189).

In a.d. 1188 Philippe had taken the cross. In 1190 the combined forces of Philippe and Richard I. of England re- dervoured at Veseluy, not far from Auxerre; and in the autumn of the same year they embarked, Philippe at Genoa, and Richard at Marseille. They met and wintered at Messina in Sicily, and in 1191 proceeded to the Holy Land; but Richard having found the season the wrong for the enterprise, returned to England, as a warrior, made ill health an excuse for returning to France, and reached Paris in December, 1191. He had left his mother Alix, and his uncle, the archbishop of Reims, regents of his kingdom. The incidents of the crusade had made Philippe, as already noticed, a complete rival to Richard. On his return, commenced his attack on the other, first by intrigues, and afterwards by force. He made some acquisitions in Normandie, but failed (a.d. 1194) in attacking Rouen. The following years were occupied with almost continuous periods of truce and hostility, in which the policy and steadiness and the feudal superiority of the French king rendered him a match for the more soldier-like qualities of Richard; and on the death of Richard (a.d. 1199), the incapacity of John, his successor, enabled Philippe to establish decisively the superiority of the Capet race over the rival family of Plantagenet. During this war, Philippe, now a widower, crowned Richard of Ingelbuge, or Sarmis, uncle of Guisse VI., and deposed Richard (a.d. 1193); but he obtained a divorce in an assembly of prelates and barons, by marrying Marie, or Agnes, daughter of Berchithold, duke of Meranias, a German noble (a.d. 1196), in contempt of the authority of the popes, which Philip pelaged had been carried, and by whom the divorce had been annulled. The struggle between the king and the pope (Innocent III.) continued for some years, until an interdict laid by the former was removed by the latter. Philippe was disabled by palsy, and Philip II. was engaged in an affair to an ecclesiastical council at Soissons (a.d. 1201); but he evaded their decision by a pretended reconciliation with his queen Ingeburg, whose real condition was however little improved. Marie of Meranias, from whom he had been dispensed in 1206, married, after his death, the count of Turenne, whom the pope did not scruple to declare legitimate. The murder of Arthur of Bretagne, by his uncle John of England, having roused general indignation, Philippe seized
the occasion to attack Guienne, Normandio, Touraine, Anjou, and Poitou. These, except Normandio, he invested, and prosecuting John before the court of the twelve peers of France, by a sentence quite unprecedented in France and unauthorised in such a case by the institutions of feudalism, procured the condemnation of all his French dominions (a.d. 1268). Critical of the state, he was able to take all the duty of the noble to his feudal superior, had not hitherto been cognizable in the great feudatories; and the Court of Peers, which Philippe professed to revive from the institutions of Clovis, was not for nothing, but without the candle-light. It was to a great extent, and a great extent only, because of the count of Champagne was substituted), and six prelates, by means of whom the king sought to influence the decisions of the tribunal. As in judgments involving a capital sentence the ecclesiastics could not take part, it is probable that the number of twelve was made up out of the higher nobility who were at court at the time. The nobles forming the court, proud of sitting in judgment on a crowned head, lent themselves, however, to the programme of Philippe, who met with no opposition in thus establishing a jurisdiction which might hereafter promote the aggrandisement of the crown.

In the interval of peace which followed, Philippe endeavoured to consolidate the institutions of his kingdom by holding the assembly of Poitiers, France, 1261, where the crusade against the Albigensians was about this time (a.d. 1207, 1213) carried on, continued to be merely nominal. He embellished Paris, protected the university of that city, and sought the favour of the church by supporting the cause of the French clergy in their disputes with the English. The decrees of the Council of Reims (1210) were rescinded; the English were not allowed to have an audience in the French court; and Philippe, in the presence of the English king, John, and others of the English barons, confirmed his predecessors' decrees. He also convened the estates of France, the council of the French nobles, which had been convened for the first time under his father, and had risen to the rank of chamberlain. His elevation, and the abuse, real or supposed, of his influence over the crown, caused his downfall; he was arrested (a.d. 1278), tried, convicted of some charges, and banished from the kingdom. The French nobles, condemned to be hung, and executed in pursuance of his sentence. The immediate cause of his downfall is supposed to have been his inspiring Philippe with a suspicion that his Queen, Marie of Brabant, had poisoned her step-son Louis, Philippe's eldest son by his first wife, in order to open a way for her own children to the succession.

In 1263 Philippe engaged in war with Pedro, king of Aragon; the crusading king, whom the pope (who had excommunicated Pedro) to Charles of Valois, Philippe's second son, to be held in feudal subjection to the holy see. The French king assembled his barons and prelates to deliberate on the matter, and by their advice assembled a powerful army. A crusade was formed of nobles, at the town of Elia by assault and massacre the inhabitants, compelled Rosas and Figueras to submit, fought an indecisive battle at Hasta- turch, and took Cerona by capitulation. But the long siege and severe loss which this last-mentioned town had cost them, the superiority of the Aragonese and Sicilians by sea, and the wasting of his army by disease, compelled him to commence a retreat, which he did not effect without considerable loss. Philippe himself seized by the disease which had wasted his army, and died, on his return to France, at Perigean, 4th December, a.d. 1285.

PHILIPPE IV., also known as PHILIPPE LE BEL, son of Philippe le Hardi, by his first wife, Isabella of Aragon, was born a.d. 1268; and succeeded his father on the throne of France, October, a.d. 1285, having previously been an active co-regent of his father. He was crowned at Reims, January, 1286. The war with Aragon continued, but was carried on languidly. The young king gave, from the first, his confidence to the lawyers, who were gradually to the exclusion of the military, by this he was able to secure and giving consistency and stability to a system of jurisprudence favourable to despotism; they flattered him, by describing his power as absolute; and inspired him with a desire to strengthen his kingdom, to which they looked upon as rival classes to themselves. It is likely that in the earlier period of his reign he indulged the love of luxury and refinement then prevalent; though this appears, not from direct testimony, but from historical reality,
In 1390 he despoiled the Jews; and in 1391 he ordered the Italian merchants, who engrossed nearly all the commerce of his kingdom, to be imprisoned; and by the apprehensions of further violence, with which he inspired them, induced them to make overtures by himself or his friends, and were speedily the kingdom. Two brothers, Florence, Biceio and Muscatello Frangini, are supposed to have prompted Philippe to this deed of violence and injustice, by which they not only filled the king's coffers, but saved him from the incursions of the English, and had a little effect in augmenting his wealth, and in depressing the power of the nobility.

In 1290 Philippe paid a visit to the south of France, in order to form with his allies a plan of combined operations against Aragon, to confirm his authority over his remote vassals at the foot of the Pyrenees, and to gain the affections of the nobles of Guienne, then subject to Edward I. of England, of whom Philippe began to be jealous. In 1291 he proposed to renew the attack upon Aragon, refusing to ratify the treaty which had been sent to him by the belligerent parties at Tarragona in the early part of the year; but the proposal was probably a mere feint to raise money. In this point too the policy of Philippe bears a close resemblance to that of Henry VII.; and Edward, observant of his predecessor as a vassal of the king of France, obeyed the summons by sending his brother Edmund to appear before him (A.D. 1294). Anxious to avoid a continental war, he consented to deliver up six towns in Guienne to commissioners appointed by Philippe; and to surrender to him a heavy sum, most deeply implicated in the previous hostilities, to take their trial before the parliament of Paris. Instead of six towns, Philippe caused the whole of Guienne to be occupied by an armed force; and when he had thus obtained possession, he charged Edward with concurrency, and cited him again before the parliament, under heavier penalties for non-appearance than before. Enraged at being thus outwitted, the English monarch renounced his allegiance, sent his envoys to receive Guillaume II. (A.D. 1295), and formed alliances with various continental princes against Philippe. But the war was languidly carried on, for Edward's attention was engrossed by Scottish affairs, and his continental allies made few efforts, except the Flemings, who were unfavourable to their aristocratic�tressed the idea of continuous control of their state, and by the arrangement of some matrimonial alliances between the two royal houses, concluded by the mediation of the pope Boniface VIII. (A.D. 1298.) By the treaty of Poitiers (A.D. 1298), the sovereignty of Guillaume was confirmed; but the final adjudication of that great fief was reserved for the future decision of the pope. The expenses of this war increased the necessities of Philippe, and these led him into disputes with the clergy and the pope, and made him persecute the Jews in order to extort from them a portion of their wealth.

The last years of Philippe's reign were signalised by these insidious proceedings. He managed about the same time (A.D. 1310) to gain possession of Lyon, which had previously enjoyed a considerable degree of independence, though nominally subject to the crown. [Lyon] He also interfered as mediator (A.D. 1313) between Edward II. of England, who had married his daughter Isabella, and the discontented barons of that kingdom. His necessities induced him to increase his claims on the clergy, and to threaten to deprive them of the control of the monasteries; and his severe and suspicious temper led him to reiterated cruelties. The wives of his three sons were charged with adultery, and two of them were declared guilty, and condemned to imprisonment; while their lovers, and those who were supposed to have sided in their crimes, were put to death by the most horrid tortures. The wife of Philippe, count of Poitiers, his second son, was acquitted (A.D. 1316).}

Philippe le Bel died at Fontainebleau, from the effect of an accidental fall while hunting, 29th of November, 1314, in the thirtieth year of his reign, and the forty-sixth of his age.

It was in the reign of Philippe le Bel that the Tiers État, or commons, were admitted for the first time to take part in the national assemblies subsequently designated les États Généraux, or States-General. They were present at a council held (A.D. 1309) on occasion of Philippe's dispute with the
pope Boniface VIII. It was in this reign also that the siting of the parliament, the supreme judicial court, into which, by the substitution of the lawyers for the nobles, the ancient Cour de Pairs [PHILIPPE IIII.], had been transformed, became fixed at Paris.

PHILIPPE VI., also known as PHILIPPE LE LONG, the second son of PHILIPPE IV., or 'le Bel,' was born A.D. 1294, and succeeded to the throne A.D. 1316. His elder brother, Louis X., or Louis le Hutin, had died 5th of June, 1316, leaving by his first wife a daughter, who succeeded him on the throne of Navarre, and his second wife, a son, Louis, later wife, pregnant. On the news of his brother's death, Philippe, who was at Lyon, where the conclave of cardinals were engaged in the election of a pope, hastened to Paris, and assembled in the Concile of the Ghetto, the barons of the kingdom, who were assembled for the purpose, until the birth of the child, of which the widowed queen was then pregnant. If she produced a son, he was to retain the government and regent during the minority of the child; if a daughter, he was to be recognised as king.

The child, which was a boy, died a few days after birth (November, 1316), and Philippe assumed the sovereignty in full right, and was crowned at Reims, Jan. 9th, 1317.

It was then generally accepted that the charge of having occasioned the death of the queen, was excluded from the succession to the throne, as well by which females were excluded from the succession to the throne, was established as a constitutional law in France. Louis X. had left a daughter, Jeanne, queen of Navarre; and there appeared to be a precedent for election; but no such precedent, or from the analogy of the laws of succession which prevailed in other kingdoms, or in the great fiefs, for her exclusion. The ground urged by the legal supporters of Philippe's claim was this: the law was not always the same thing in the crown to the Salic heir, a peculiar species of allodial possessions, but which law could only by a remote analogy be made to bear on the succession to the throne. The case of a sole heiress to the crown had not however occurred before; and there was no precedent for the exclusion of a female, there was no instance of one having really occupied the throne. Jeanne was, besides, a female and a minor: the duke of Bourgogne, her maternal uncle, who was her natural supporter, had also the nearest in her blood the title of a Salic General, being convoyed, confirmed the title of Philippe; and the death of his only son induced his brother Charles to assert to it, in the hope of turning against Philippe's own daughters the law of which he was desirous to avail himself to the exclusion of his niece. The Salic law was thus firmly established as the fundamental law of succession in the French monarchy.

The States-General which assembled three times in this reign, indeed, not to divide Philippe's title to the throne, then to regulate the finances, and lastly for a general reform of abuses. In the first of these assemblies Philippe issued an edict, giving a military organization to the communities, though his nature was not such as to change the nobility, to make some modifications in it. Another of his edicts revoked the grants made by his father and brother from the royal domain, and became the foundation of the constitutional principle that that domain was inalienable. In other edicts he gave increased regularity to the legal and fiscal institutions which were gradually superseding the arrangements of the feudal system. These edicts were issued by the king as from himself, and the States-General were carefully precluded from the exercise of any proper legislative functions.

The south of France was during this reign the scene of cruel persecutions, directed by the influence of the pope, John XXII., with whom Philippe returned in constant agreement, against the Franciscan monks. In 1320 an immense body of the French peasantry assembled from all parts for a crusade, attracted by two priests, who preached that the deliverance of Jerusalem was reserved not for the high-born and noble, but for the meek and lowly. They soon became disorderly, and perpetrated the most merciless outrages on the Jews, until they were put down by force, or died of famine. Many of the poor, mischievous severity were exercised against those of them who were not Jews. In 1321 a dreadful persecution was directed against those afflicted with leprosy (a disease which the crusaders had brought from the East), on a charge of having poisoned the wells and banished and their goods confiscated. It was while engaged in these cruel proceedings that Philippe le Long died, Jan. 3, 1322, at Longjumeau near Paris, after a reign of rather more than five years. He left four daughters; but the Salic law excluded them from the throne, and he was succeeded by his brother Charles IV., or Charles le Bel.

PHILIPPE VI., or, as he is usually called, PHILIPPE DE VAULOIS, succeeded to the throne, A.D. 1328, after the death of Charles IV. le Bel (A.D. 1328), and was the first king of the collateral branch of Valois. He was son of Charles, count of Valois, a younger son of Philippe IIII. le Hardi, and cousin to Charles the Bad, and Charles le Bel, who successively were the crown. In the reign of Philippe le Long he had headed an expedition of the nobles and gentry of France to overthrow some chief towns, particularly Paris, by the public and incapacity involved in him difficulties, from which he was relieved only by the policy or generosity of his opponent, who allowed him to retire with his army into France (A.D. 1320).

Charles le Bel died Feb. 1, 1328, and left no male heirs; but his widow was pregnant, and the nobles of the kingdom determined to wait the result of her confinement; and in the mean time the sovereign power, with the title of regent, was confined to Philippe de Valois. When the queen was delivered of a daughter (April 1), the right of succession was far from clear. All the doctors of civil and canon law agreed that women were excluded from the succession to the crown of France; but as a female, a woman, being disqualified merely by sex, might transmit a right to her descendants, just as a lunatic or an idiot might be supposed to do; or whether the disqualification affected only the woman, but she having died, whether the children had derived a claim through her. But however the lawyers might agree as to the exclusion of females, the operation of the Salic law had been too recent, and too obviously the result (in part at least) of the superior power of the male claimant, to be entirely satisfactory to the public mind, or to those whose interests were considered in the dispute; and Philippe, count of Evreux, who had married the daughter and heiress of Louis le Hutin, and was, in right of his wife, lord of Normandy, might, if the extraordinary and unusual rival, had not readily exchanged a right of so doubtful a character for the peaceful possession of the throne of Navarre. The daughters of Philippe le Long and Charles le Bel, all yet in childhood, wanted either the inclination or the power to advance their claims against so formidable a competitor as Philippe de Valois; and Edward III. of England, who was next in succession, as being son of Isabelle, sister of the last three kings, was as yet also a minor, and had not, as first to his dispute with the French to render any measures to vindicate his claim. The power therefore of Philippe as regent, his mature age, his large hereditary possessions, and his popular character, added to the plausible tradition that his strong family showed the male ancestors, enabled him quietly to ascend the throne.

He was crowned at Reims, May 29, 1328. Isabelle, in the name of her son Edward III., protested against this invasion of his rights; but as Edward did homage to Philippe the next year for Guienne, he may be considered as having renounced his claim, which would probably never have been revived but for subsequent events.

The first important enterprise of Philippe after his coronation was an expedition into Flanders, to put down theburghers of the great towns, who had revolted against their count. The Flemings surprised him in his camp at Cassel, but were defeated with great slaughter (Aug. 31, 1329), and Philippe returned to France with all the glory of victory. The early years of his reign were also occupied in regulating the coinage by successive edicts, in settling the boundaries of the civil and ecclesiastical jurisdictions, and in determining the succession to the county of Guise was claimed by Robert, count of Beaumont, more familiarly known as Robert of Artois, against his aunt Mahaut, who had usurped the county in his minority, and had been confirmed in possession by the parliament of Paris. After having Philippe le Bel Robert had subsequently tried to obtain his right both by force and by legal process, but was defeated. He now (A.D. 1330) made another attempt with more favourable prospects, but was again defeated, and banished from the kingdom; having found favor in documents in support of his claim. He subsequently retired into England (A.D. 1337), and instigated Edward III. to renew his claim to the French throne.
A crusade against the Moors of Granada was a favourite project of Philippe; but the concessions which he demanded of the pope, as the price of his services in this affair, were too exorbitant, and the project failed (a.d. 1332). He also sought the assistance of David Bruce, king of Scotland, against Edward III, and afforded him a refuge at his court: these measures, and disputes which arose in Guienne, tended to hasten the approaching rupture between France and England. The match between a party in the papal court and that of Edward III and Philippe broke out. The former assumed the title of king of France, and formed an alliance with the Flemish burghers, at that time under the influence of James Ariveiel of Ghent, and they made two fruitless campaigns on the side of Flanders (a.d. 1338, 1339). In 1340, the French, first under Jean, son of Philippe de Valois, and then under the king in person, attacked Hainault, the county of which was in alliance with Edward; but the defeat of the French fleet at Sluys (June 24th), induced Philippe to retire; and after some other hostilities, an armistice of six months was concluded. Our limits do not allow us to particularise the incidents of this period: the empire was carried on in Brittany, where Edward and Philippe engaged as auxiliaries [Bretagne], and in other parts. In the course of it, Philippe sought to obtain money by depreciating the coinage (a.d. 1341) in order to revive commerce and regulate the administration of justice, the last almost the only acts of his reign that were really useful (a.d. 1344). He arrested the Lombard and other Italian merchants in his dominions, and confiscated their goods (a.d. 1347). The latter part of his reign was attended with many measures which were unjust. He sustained a great defeat at Crécy (a.d. 1346) [Crecey]; lost Calais, the key of his kingdom on the side of England (a.d. 1347) [Calais]; and was unsuccessful on the side of Guinette and Poitou (a.d. 1345, 1347). A dreadful pestilence, which swept away a third part of his subjects (a.d. 1348), filled up the measure of his adversity. The acquittal of the district of Viennois, ceded to him by the dauphin or lord of that country [Dauphiny], was a poor counterbalance to these calamities.

The death of Philippe was owing to debility, the result of an unseasonable marriage with the princess Bianca of Naples, a girl of eighteen, whom he married Philippe's eldest son. During Jean's absence, the king married her himself. He died at Nogent-le-Roi, near Chartres, Aug. 22, 1350, in the fifty-seventh year of his age, and the twenty-third of his reign.

Philip of Burgundy. [BOCGOOGNE.]

PHILIPPII. [BUTTES: MACEDONIA.]

PHILLIPPIANS, EPISTLE TO THE, is one of the epistles written by St. Paul during his first imprisonment at Rome. (Paul, St.)

Like the other early churches planted out of Palestine, the church at Philippi in Macedonia consisted of Jews and Gentiles, the latter forming the larger portion. These Philippians must however have been acquainted with, and have been acquainted with, the manners, customs, and philosophy of the Greeks, since the epistle contains allusions to the which of no other persons could fully understand. They were first converted by the preaching of St. Paul about twelve years before the date of this epistle, which was written apparently but a short time before his release from his imprisonment at Rome, a.d. 63.

The occasion of its composition seems to have been the following:—the Philippians, being informed that St. Paul was a prisoner at Rome, sent contributions for his relief by the hand of Epaphroditus, whom Theodoret and others represent as their bishop. St. Paul, being much rejoiced by this act of affection, wrote them briefly, to let them know how great was their proficiency in all Christian excellence, sends back Epaphroditus with this epistle.

In addition to the utterance of his joy on these accounts, he gives them instructions in the purpose of faith, amid their exposure to the scorns of persecution and the contigion of false teaching; and of exciting them to cultivate a oneness of thought and feeling, and ever to aim at higher measures of knowledge and obedience. These instructions he enforces by holding up the perfection of Christ, the most excellent of worlds. In this epistle his disciples a scope for leading a life at once contemplative and active, and so giving them the power of enjoying and diffusing substantial happiness.

In this epistle, Paul discourses much of his own character, the traits of which cannot fail to create in the mind of an attentive reader an idea of true dignity. He delicately proposes his own conduct for the imitation of the Philippians, and, with no mixture of affected humility, he disclaims all personal merit, for whatever is seen in him or heard of him. His language is for the most part constructed with great skilfulness; his thoughts are arranged in an order exactly suited to his design; and his manner is grave and dignified.

The canonical authority of this epistle has never been doubted. But because St. Polycarp speaks of St. Paul as having written to the Philippians epistles, some critics have thought that this is not the only epistle which they received from St. Paul, or that it was originally two. In reply to this it may be observed that instances from writers both Greek and Latin could easily be produced to show that the plural form of this word must sometimes be understood in the sense of "some"; and there is no other reason to suppose that St. Polycarp referred to any writing but this epistle of St. Paul as we now find it. (Theodore and Bishop Fell On St. Paul's Epistles; Fabricius, Bibl. Græca.)

PHILIPPI. [DEmosthenes.] PHILIPPIERI'ES of Athens, a poet, and a writer of the new comedy, flourished about B.c. 335. He wrote forty-five plays, of which the titles of twelve are mentioned by the authors. He died of joy at an advanced age, after he had obtained a prize which he did not expect. (Suidas, Lestacion; Fabricius, Bibli. Græca.) Some fragments of Philippiades have been collected by Hertelius.

PHILIPPIDES, THE, constitute the most northern group of the islands that compose the extensive archipelago known under the name of the Indian Archipelago; and they lie between 5° and 20° N. lat. and between 120° and 127° E. long. The Strait of Batingaung, or Great Passage, separates them from the Batanes and Bashee islands, which lie farther north. On the east extends the Pacific, and on the south the Celebes Sea. Two rows of small rocky islands, which run from the southern coast of Mindinao, the most southern of the larger Philippine Islands, southward to the northern parts of Gilolo and Celebes, unite the Philippines with the Moluccas, and separate the China Sea from the South China. This line of islands runs from the south-western extremity of Mindinao west-south-west to Capes Unsang and Labian in Borneo. They are called the Sulu Islands, and between their eastern extremity and Mindinao is the Strait of Baslan, a very narrow strait, and consequently, not navigable for vessels of any size. Farther north, the Philippines are connected with Borneo by another chain of islands, which extends in a north-north-east and south-south-west direction between the island of Mindoro, one of the Philippines, and the Cape of Insurugang and Samsamanggo in Borneo. This chain, which is called the Palawan Islands, or the Archipelago of Felicia. separates the Mindoro Sea from the Chinese Sea, which are connected by Mindoro Strait. The Mindoro Sea and the Chinese Sea wash the western shores of this group.

The Philippines consist of ten larger and a great number of smaller islands. The larger islands have altogether an area of more than 128,000 square miles, according to the estimate of Berghaus, in which the surface of Mindinao, whose area is perfectly imperfectly known, is estimated at 36,140 square miles. The smaller islands comprehend, according to the same authority, 6280 square miles; and the whole group is more than 127,000 square miles, which is about 15,000 square miles more than the surface of the British Islands. Nine of the larger islands are considered as subject to the Spaniards, who have also a settlement, in the same sea; the rest, under the administration of Mindinao, the remainder of this island being in possession of the sultan of Magindanao and some native tribes. We shall notice the larger islands separately.

1. Lautropia, is by far the largest of these islands, has according to Berghaus, an area of 57,405 square miles, which approaches very nearly the area of England and Wales.
The name means a mortar. When the Spaniards, at their arrival, asked for the name of the island, the natives, who had mortars before their doors, called lowong, and which are used in cleaning rice, thought they were asking for the name of Luzon, and pronounced that to be the island whose proper name seems to be Ybalon, received the name of Luzon. The form of the island, which is extremely irregular, may be compared to a bent arm. Its length, along a straight line drawn from the most southern point, Ponto Calatagan, to the Gulf of Lagingyan, on the southernmost side, measured along the bend it is more than 550 miles. The width varies between 10 and 136 miles. Where the bend occurs, which is near 14° N. lat., a deep bay enters the land from the north, and divides the island into two peninsulas.

The isthmus which connects the two peninsulas is only from 10 to 12 miles wide, and nearly 50 miles long. The western and smaller peninsula is distinguished by the name of Camarines. Besides the bay, which lies to the east of the isthmus, and is called Seno de Lamon, the rocky coast of the island is indented by a great number of larger and smaller bays, among which the most extensive on the larger peninsula are the Bahia de Manila and the Golf of Lagingyan, both on the western side, and peninsulas of Camarines, the Bahia de S. Miguel and the Seno de Albay on the northern coast, and the Seno de Ragay on the southern.

That portion of the island which lies north of 16° N. lat. seems to be nearly a land locked basin, which in many places come close to the shore of the sea, and in others are divided from it only by a narrow strip of low and frequently sandy ground. This mountain-mass terminates on the Gulf of Lagingyan; and the high, steep and high rocks, which render nearly the whole of this coast inaccessible. Accordingly we find that, except at one place, where there is a bay of moderate extent, there is no means of communication between the plains and the mountains, which rise to a great elevation, are only inhabited by the wandering Haraforas. This mountain-region, which extends from Cabo S. Idefonso, on the south, to Punta S. Vincente on the north, a distance of nearly 200 miles, with an irregularly furrowed surface, is known as the name of Montes Caravallas. Along its western declivity there is a valley which is traversed in its whole length by a river called Cagayan or Tagayo. Between 14° and 15° N. lat. this valley enlarges to a plain of considerable extent, called Llanada del Difun, on which there are several Malay settlements, as well as in the valley itself, which extends to the northern coast of the island, and seems to be in general of moderate width. These are the only settlements in the interior of the northern districts of Luzon which are subject to the Spaniards, and they do not appear to be numerous or large. We are not informed whether the river Cagayan is navigable. West of the valley of the Cagayan there is another mountain-mass, where settlements have been made, which in some respects probably extends over 60 miles in width. It is called Sierra Madre, and appears to rise even higher than the Montes Caravallas; the western declivity however is not steep, but has a gentle slope. These mountains are covered with a fine grass, the only species found, but the beach, but generally terminates at some distance from it, leaving between its base and the sea a wide tract of comparatively level and fertile ground. On this tract, and on the banks of some rivers which flow the mountain-slope, the settlements are numerous. The Sierra Madre only extends to the northern coast of the island in one place, where a high rocky mass, called also Montes Caravallas, reaches the very beach. The low country which separates these two mountains in the north is sandy, and generally sterile; the settlements in this part are consequently small and few in number. The elevation of the mountains has not been determined, but it is observed that they do not attain the snow-line, and probably they do not rise above the line of trees.

The Montes Caravallas, or eastern mountain-mass, do not terminate at Cabo de S. Idefonso, but continue southwardly along the channel, and the district of the Seno de Albay. To preserve their high and rugged character, though the width is diminished to about 10 miles. But as they proceed farther south between the sea and the lake, called Laguna de Bay, they diminish in height as well as in width. The general elevation in this part, according to a measurement of 1837, does not exceed 4000 feet above the sea-level, though a few summits may rise 2000 or 3000 feet higher. In this part of the range both declivities are gentle, and admit agricultural settlements, which however are more numerous towards the lake than towards the sea. The Montes Caravallas continue farther south, and turning to the south-east they apparently run in an unbroken line through the isthmus which joins the peninsula of Camarines to the mainland, where they terminate at the south-eastern extremity of the isthmus in the projecting promontory called Cabesa Bondoc.

The Montes Caravallas are not united by a mountain-ridge with the Sierra Madre; but south of 16° N. lat., and between 13° 30' and 14° 30' north, there is a mountain-mass, a broken and elevated tract extends between them, which constitutes the uniting link between the two mountain-masses; along the south-western base of this tract, in the western part of the Montes Caravallas, there is a level plain of great extent and fertility, called the Plain of Pampanga. This plain extends, from the innermost recess of the Gulf of Lingyan (16° N. lat.) to the north, to the Bahia de Manila (14° 45' S.) on the south. It is about 90 miles in length, with an average width of about 30 miles, so that it covers a surface of 2700 square miles. A few isolated hills rise on this plain, among which one attains a considerable elevation: it is called Mount Aragat, and is remarkable for the great number per of hot springs which issue from its base, and the deep ravines by which its sides are furrowed. The whole plain is very little elevated above the sea-level, full of lakes, and traversed by rivers, whose mouths are only a few feet above the level of the sea.

In the northern districts there is a large lake, the Laguna de Canarim, on the most elevated part of the plain; two rivers issue from it, one towards the north, which falls into the sea on the west coast of Luzon and is called the Tagus; the other enters the Bahia de Manila. These rivers, of which the first is called Rio Grande, and the second Rio de Pampanga, are of great importance, as the produce of this rich and fertile country is conveyed to the coast by these rivers. The first is about 160 miles long and 20 miles wide. The highest portion of it is towards the south, where its general elevation is estimated to exceed 7000 feet. North of 16° N. lat. however the mountains grow lower, and where they approach Cape Bolinao they are of moderate elevation.

Five summaries in this mountain-mass rise to a greater elevation, but the height of none of them has been determined. These mountains approach very near the sea, and agricultural settlements are made in the sheltered ravines of these ranges; the mountains themselves are wooded, and in possession of the Aetas, or original inhabitants of the island. It is not said that any active volcanoes exist in any of the mountainous districts of Luzon, although the country is covered with a fine cap of ashes, and the whole island, probably that which on our maps is called St. Thomas,* and which lies on the western side of the Gulf of Lingyan, in 16° 12' N. lat., made an eruption in 1641. The Bahia de Manila, is one of the finest basins in the world. It is nearly of a circular form, and measures from 20 to 25 miles in every direction. It is nearly free from shoals, and contains excellent anchorage. The surface is usually only agitated by short gales. It is entered by two channels: the northern, called Boca Chica (little mouth), is more than 2 miles wide between the large island of Corregidor and the peninsula of Bataan; the southern, between the small island of Pulo Cevallo and the Isla Sinialn, near the southern coast, is nearly 6 miles wide, and called Boca Grande. The bay is usually entered by the Boca Chica, except when the wind blows from the east, which always produces a strong current running westward through the channel, and the tide runs strongly from the mouth of the bay. The tides in this bay are very irregular during the north-east monsoon, when the low tides run through the Boca Chica with rather a strong current for 18 hours, whilst the high tides are generally only 12. The rise is about three feet at full and change. There is an excellent harbour before the Boca Chica called Puerto de Mariles.

The shores surrounding the bay are low, except at the entrance, where there are rocky mountains of considerable
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elevation. Along the northern shores the low Plain of Pampanga extends for nearly 20 miles, and is here divided into a great number of islands by the numerous branches into which the Rio de Pampanga divides as it approaches the bay. A hilly country begins west of the bay and a mile or two from the shores, and continues as far as the mouth of the bay. This part of the coast is about 20 miles long, and on an average 10 miles wide, but is divided into two nearly equal parts by a projecting tongue of land and an island situated opposite its termination. The western part of it is in general only from 5 to 6 feet deep, but the eastern part is much deeper, and in the centre it is from 17 to 20 feet deep. It is surrounded by low land, which at a short distance rises into hills. The surface of the water is about 36 or 40 feet above low water mark. The bay is carried off by five very narrow channels, which soon unites, and, being joined by a small river, constitute a wide and tolerably deep stream, called the Rio Pasig, which flows westward to the Bahia de Manilla, and has its outlet between the two towns of which the capital consists. The slightly hilly country that surrounds the bay and extends on both sides of the Rio Pasig is very fertile and populous.

From the banks of the river and of the lake the country rises gradually to the south for some miles, where it is followed by a tract of land the surface of which is extremely uneven, and has a number of isolated mountain-summits scattered over it, many of which rise to a considerable height. Not a mile from this region the Laguna de Bay or lake is a lake of a circular form, about 12 miles in length from north to south, and 10 miles in width where it is broadest. This lake contains the island of Taal, and the volcano of the same name, which made a great eruption in 1764; in 1925 smoke issued from it. At a considerable distance east of the lake is another volcano, called the Banajan de Tayabas. The country which extends southward from these volcanoes appears to be of great fertility, and is pretty well settled; it terminates on the south at the Pintado de Mindoro, or the Little Strait of Mindoro, so called to distinguish it from the Large Strait of Mindoro, which lies farther west and separates the island of Mindoro from the islands of Camarines. The latter island is 120 miles long, and about 5 miles wide in the narrowest part. It is navigated by vessels, which when coming from the Pacific sail round the south-eastern extremity of Luzon through the Embo- cadero de S. Bernardino. On the northern shores of the Little Strait of Mindoro are two good harbours, called respectively Ensenada de Batangas and Ensenada de Balayan.

The peninsula of Camarines, or the south-eastern part of the island of Luzon, is not connected with the north-western part by a range of mountains. Towards the eastern extremity of the isthmus, which connects both parts, the mountains entirely disappear, and where the two bays called Straits of Camares and de Iloilo meet, are quite another, and are only about 15 miles apart, the intervening country is low, and constitutes a valley several miles wide, which runs across the island from one bay to the other. It is not improbable that a natural water-communication exists between the two bays, like that in the Plain of Pampanga.

The peninsula of Camarines is chiefly occupied by a mass of high mountains, which come close to the southern shores, and in a few places leave a narrow strip of level ground. But the northern extremity of this range is so steep, and terminates about 6 or 8 miles from the sea. The intervening tract is at some places covered with rocky hills, and in others it extends in low plains. On this tract, and south of the islands from the mouth of the river, ten volcanoes, the names of which, from north-west to south-east, are Bonotan, Bacacay, Lobo, Colasi, Yareog, Yriga, Bug, Masaranga, Alby, or Mahon, and Bulusan. The Volcano de Yareog, which occupies the centre of the isthmus between the Barreto de Maipuy and the Sono de Miguel, is distinguished by its size and elevation; that of Alby or Mahon is noted for the frequency of its eruptions. No eruptions of the other volcanoes are recorded. There is a considerable number of agricultural settlements on this volcanic tract, especially in the country surrounding the Bahia de S. Miguel. This bay is about 23 miles long from north to south, with an average width of 12 miles. On the southern side it is a low and flat land; near its entrance the country rises into high hills. Being encircled by high ground, and having excellent anchorage, it forms a very good and safe harbour. A shoal in the middle of the entrance has only four feet water on it, but the channels on each side of the shoal are deep and free from rocks. The strait which divides the most south-eastern extremity of Luzon from the island of Samar, is called the Embocadero de S. Bernardino, and is dreaded by navigators on account of its currents. 2. Mindoro, which is separated from the island of Luzon by the Little Strait of Mindoro, and from the islands of Camarines by the Great Strait of Mindoro, is 100 miles long, and rather more than 40 miles wide on an average. Its area, according to Berghaus, is 4112 square miles. This mountain which occupy the interior rise to a very great elevation; but they descend in gentle slopes, and the sea-shore is skirted by low hills, which are covered with forests of lofty trees. The climate is very hot and moist, and the country is settled on some points of the coast. In 1818 their number did not exceed 951, and the whole population amounted only to 4980 individuals. It is the least important island of the whole group, though it has several good harbours on the Great Strait of Mindoro, among which the Ensenada de Manguirin, towards the north, and the Ensenada de Pelayan, towards the north, are the most extensive; but the approach is dangerous, owing to rocks.

3. Panay. A rough triangle, the base of which is more than 100 miles long, and the other sides more than 80 miles. The area, according to Berghaus, is 4279 square miles, or nearly double that of Devonshire. This island is not separated from Tanauan by any considerable body of water; it is well cultivated, and populous; villages are numerous; and the churches, though small, are well built. At some distance from the shore, a mountain-ridge runs from Punta Potol, on the north, to Punta Nago, on the south, and appears to be very steep. We have no account of the natural features of the countries contiguous to the northern and south-eastern coast. According to the census of 1818, the population of this island was 292,500; and according to an estimate in 1837, it had an increased number of 42,000 persons and 4200 individuals. This shows that Panay is the most important island of the whole group next to Luzon, and is even more densely peopled than that island.

4. Mindoro, is about 140 miles long, with an average width of about 25 miles. The surface, according to Berghaus, is 3827 square miles, or 1000 miles more than the county of Lincoln. We are not acquainted with its surface and soil. It seems to be very mountainous, and contains a comparatively small number of agricultural settlements. The population subject to the Spanish government in 1818 consisted of 35,443; and in 1837, of 35,622 individuals.

5. Zebi, or Cebi, extends in length from south to north rather more than 100 miles, but only about 20 miles wide on an average. The area, according to Berghaus, is 2132 square miles, or about 120 square miles more than that of Norfolk. We are not acquainted with its natural features, but we may suppose that it does not contain much waste land and high mountains, as the population is very considerable. In 1818 it amounted on the island to 68,772 inhabitants; and in the whole province, which included the island of Bohol and four smaller islands, it amounted to 165,426 individuals. According to the returns of 1837, the population of the whole province had increased to 250,817 individuals.

6. Bohol, situated between Zebi on the west and Leyte on the east, is the smallest of the larger Philippines except Masbate. It extends in length from west to east about 45 miles, with an average width of 35 miles. Berghaus determines the area to be 1354 square miles. We have no accurate account of the natural features of this island, but the returns of 1818 show that it contained 80,344 individuals, or nearly 40 persons to a square mile. According to the account of 1837, in which the island is included in the government of the province of Zebi, we must suppose that it has greatly increased, for the whole was taken.

7. Leyte, or Léte, extends from south to north about 120 miles, with an average width of 35 miles. According to Berghaus, the area is 4257 square miles. We have no better account of the natural features of this island than is given by Berghaus, as it contained in 1818 a population of 90,344 individuals, or nearly 60 persons to a square mile. According to the account of 1837, in which the island is included in the government of the province of Zebi, we must suppose that it has greatly increased, for the whole was taken.

8. Mindanao, or, as it is also called by the Spaniards, "Fobo- lano, is the largest of the Philippine Islands, and is subject to Spain, next to Luzon. It has the form of a triangle whose apex is turned to the south; the base measures about 60
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miles, and the perpendicular length about 115 miles. The surface is 5547 square miles, or about 300 square miles less than Yorkshire. A great part of this island, especially towards the north, is covered with high mountains, which are visible from a great distance, and from their heights, general, though low from their own elevation, are formed by fertility, is far from being sterile. According to the census of 1818, the population of Samar and the small island of Capul amounted to 57,922 individuals, a number which had increased in 1837 to 99,635.

Magindanao: places 5° 12' N. The great majority of the people is composed of the Iloinos, who are chiefly of Malayan stock, and inhabit the country along the coast; but the interior is occupied by the Haraforas, who are treated by many as Malays, or of mixed stock, and by others as slaves.

Climate.—We do not possess a regular series of meteorological observations for any of the Philippines, except those made by Le Gentil at Manila more than sixty years ago, and they are of little value. Meyen, who was there in September and October, found that in this season of the year the thermometer never exceeded 83° at noon, and generally remained below 60°, and that the difference between day and night rarely amounted to 6 degrees. Comparing these with those of Le Gentil, he found that the mean temperature of the summer may be fixed between 80° and 82°, and that of the winter between 70° and 72°, and that the mean temperature of the whole year probably would range somewhere about 77°. The rainy season is divided between the dry and rainy seasons, which last 14 months each, and are succeeded by short intervals.

The rainy season occurs in the south-west monsoon, during which an immense quantity of water comes down, the rains sometimes continuing for ten or even fourteen days without intermission. The rains commence in the beginning of May, and do not cease before the end of October or the beginning of November. They attain their maximum in the month of July. Between the beginning of November and the end of April and May, the south-west monsoon prevails. The north-east monsoon which issues from the south and south-west, when their force begins to fail. The damage which is caused by them is as great as that produced by the hurricanes of the West Indies. Earthquakes occur frequently, and sometimes cause great damage.

Productions.—The staple articles for the European market are sugar, indigo, rum, and tobacco; and for the Chinese market, sapan-wood, rice, edible birds' nests, and tamarind. The sugar-cane is most extensively cultivated in the Plain of Pampanga; and though the manner of preparing the sugar is not a good one, the sugar itself is much prized, and sent to many parts of Europe. Indigo is cultivated to a great extent, and some has been exported, which was not considered inferior to that of Guatemala; but in general the manufacture of this article is not conducted with sufficient attention. Tobacco, which grows very well in many of the islands, is of a small size, and is in the form of cigars. Rice, for which there is a ready market, and which constitutes the principal food of the bulk of the population, is the first object of cultivation nearly all the islands. The land is covered with fine grass, and such savannahs do not occur in any other island of the Indian Archipelago. There are volcanoes on Magindanao: the existence of three is certain. One of them, the Saguiri, is not far from the southern extremity, 25° 5' from the Equator, and is the highest point of the island; and a third on the eastern side of the Bay of Ilano.

Between the northern coast of Magindanao and the island of Camiguin, is the island of Siquijor, or Pugo, on which there is an active volcano.

Magindanao is politically divided into three parts. The Spaniards have formed a great number of settlements on the eastern and western coast, where the inhabitants consist almost exclusively of Bisayos, or Malays of the Philippines. These settlements constitute two provinces of the general Capitanía of the Philippines. The Spaniards have also a military establishment at Zamboanga, on the Strait of Basilan, at the southern extremity of the island, generally, in order to prevent the pirates from the Sulu Elan and their predatory visits to the Mindoro Sea. But those islands are exposed to the depredations of the Iloinos, who not only possess the country about the lake of Lano, but also the greatest part of the shores of the Bay of Ilano, and the western coast of the island between the Strait of Basilan and the wide and open bay of Sindangan. The large peninsula which extends between the Bay of Ilano on the west and the Pinas on the east, is known as the自称 of the Sultan of Magindanao, whose subjects are mostly Malays, and inhabit the country along the coast; but the interior is occupied by the Haraforas, who are treated by many as Malays not of the subject, but as slaves.

The sandy flat, which extends from the Bay of Ilano, is the principal object of the Spaniards, who have formed settlements in this place, and permit the Iloinos to exercise their trade along the coast. The island of Cassipinab, which abounds in some of the mountainous districts, in the forests, and finds a ready sale in China. The quantity of edible birds' nests and tamarind which is sent to China is not large. A very considerable quantity of copra, or nutmeg, is carried to Manila, and is exported in large quantities to China. The nutmeg is cultivated on the islands of Mindoro, Masbate, and Sibuyan; and as a species of civet cat which swallows the berries. The greater part of the coffee exported from Manila is gathered from these wild plants, and is equal or superior in flavour to that of Bourbon. Cotton cannot be an
important article of exportation until some method is adopted, less exacting than that now in use, of separating it from the seed. Cordage is made from the fibres of a species of banana. The exterior fibres of its stem, which grows to the height of seven or eight feet, are coarse, like hemp; but the fibres are finer than the best flax, and are used in the island in the manufacture of several stuffs for clothing. The hemp itself has also of late supplied an article of exportation. Cacao, which has been brought from Guatamala, is cultivated in the Philippines, and a large part of the forest is now devoted to this crop. The forests that were formerly devoted to the growth of camphor, are now cultivated for the purpose of producing an immense quantity of cacao. The miners of the north, who find in the Spanish colonies of the Philippines a market for their produce, now use the cocoa-nut as the raw material of the oil which is so extensively used in the German chemistry. The native Spaniards, who are of different races, manufacture a fine lace, which is sold in the West Indies and other parts of the world. The cacao plant is cultivated throughout the islands, where it is extensively used as a beverage. The natives of the Philippines are fond of chocolate, and the drink is very common among them.

The Negritos of Magindanao consequently often change their abodes, and retire to those parts which are subject to the Spaniards, where they embrace Christianity in preference to Islamism, because they are permitted to eat pork, of which they are very fond. In Magindanao the Negritos are agriculturists, and the Malays who reside along the coast and in the mountains receive from them a considerable part of the agricultural produce necessary for their consumption, giving in return several utensils and baubles, which are brought from other countries. The Negritos in Luzon are savages, who have no fixed abode, but rove about the mountains, and live by the chase, and on wild fruits and honey. They occupy the greatest part of the Montes Caraballos, and also the higher part of the Montes Zambales. The Malays are divided into two districts, and the Negritos are distinguished by the characteristic method of separating the neighbourhood of Manila and the country round the Laguna de Bay. The other tribes that are numerous, the Pampanga, Zamboanga, Pangasinan, Ylocos, and Cagayan, inhabit the other plains and lower country. They are all subject to the Spaniards. Some of the tribes in the Sierra Madre have not embraced Christianity, and are not regularly subject to the Spanish government. One of them, the Ygrotes, who inhabit the mountains east of the Gulf of Lullub, are distinguished by peculiar physiognomy, and a lighter colour, which, it is supposed, must be attributed to a mixture with Chinese. As to the political condition of the Malays, it is unanimously stated that they are subject to the jurisdiction of the chief or paramount chief, in which capacity they are subject to the Spaniards as such. The forts, which are built in many places along the coast to oppose the pirates, are in their power, and are garrisoned by them. It must be a matter of surprise that the tribes of the island, whose number is very small (in 1818 it did not exceed 3000), are not driven out by the Malays; but this is explained by the fact of the great authority which the clergy exercise over them, and by which they are kept quiet, so that they never rise against government except when excited by the clergy, which has been the case several times. Though such a subject would lead us to suppose that the people must be in a low condition, this supposition is contradicted by the facts, circumstances, the Spanish lords lodged, clothed, and abundantly provided with food. They seem not to be inferior to the peasantry of most countries of Europe. Besides the Spaniards, there are a few people of colour, who, in 1818, amounted to 670 souls; there are also some Chinese, who, in 1818, were not more than 620, of which number 1669 were Christians.

Political Divisions and Population.—The Philippines, as they are subject to Spain, are divided into twenty-nine provinces, of which seventeen are on the island of Luzon, and twelve in the smaller islands, and on the northern and eastern coast of Magindanao. The population, in 1818, amounted, according to the census, to 82,734, 12,135, and 17,182, respectively; and in 1817, according to the Spanish government, the inhabitants were 81,720. The number of inhabitants of the provinces of the Philippines was 81,720 in 1818. The following table exhibits the particulars:

<table>
<thead>
<tr>
<th>Names of Provinces</th>
<th>1818</th>
<th>1817</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Tondo</td>
<td>149,905</td>
<td>230,625</td>
</tr>
<tr>
<td>2. Bulacan</td>
<td>125,021</td>
<td>181,780</td>
</tr>
<tr>
<td>3. Pampanga</td>
<td>106,381</td>
<td>181,780</td>
</tr>
<tr>
<td>4. Pangasinan</td>
<td>119,322</td>
<td>229,402</td>
</tr>
<tr>
<td>5. Ylocos del Norte</td>
<td>135,748</td>
<td>172,297</td>
</tr>
<tr>
<td>6. Ylocos del Sur</td>
<td>147,095</td>
<td>236,519</td>
</tr>
<tr>
<td>7. Cagayan</td>
<td>64,197</td>
<td>92,697</td>
</tr>
<tr>
<td>8. Zambales</td>
<td>18,841</td>
<td>36,990</td>
</tr>
<tr>
<td>9. Bataan</td>
<td>23,393</td>
<td>36,967</td>
</tr>
<tr>
<td>10. Nueva Ecija</td>
<td>15,506</td>
<td>44,579</td>
</tr>
<tr>
<td>11. Tarlac</td>
<td>48,676</td>
<td>85,245</td>
</tr>
<tr>
<td>12. Camarines del Sur</td>
<td>113,899</td>
<td>135,275</td>
</tr>
<tr>
<td>13. Camarines del Norte</td>
<td>24,955</td>
<td>29,334</td>
</tr>
<tr>
<td>14. Albay</td>
<td>92,665</td>
<td>131,743</td>
</tr>
<tr>
<td>15. Laguna de Bay</td>
<td>86,659</td>
<td>142,569</td>
</tr>
<tr>
<td>16. Batangas</td>
<td>112,190</td>
<td>131,743</td>
</tr>
<tr>
<td>17. Cavite</td>
<td>21,665</td>
<td>91,602</td>
</tr>
</tbody>
</table>

The difference between the population of 1818 and 1817 may partly be explained by the great increase of cultivation in consequence of the increased demand for the produce of the country, which was caused by opening the port of

1,407,431 | 2,264,807
Manila to the commerce of all foreign nations. It may also be partly accounted for by the circumstance that in the census of 1837 the tribes which are either independent or not quite subject to the Spaniards were comprehended, while in 1818 they were omitted; and their number was estimated at the last-mentioned period at the following rate:—

\[
\text{Individuals.} \\
564 \text{families newly converted and still under the} \\
\text{sway of the monks, composed of} \\
2,820 \\
788 \text{families of friendly Ygorrotos in the province} \\
\text{of Pangasinan, containing} \\
3,940 \\
2,160 \text{families of Tinguianos in the province of} \\
\text{Tarlac,} \\
10,800 \\
1,180 \text{families of unconverted Ygorrotos in the} \\
\text{same provinces,} \\
5,900 \\
1,523 \text{families of non-converted Negroes in the} \\
\text{same provinces,} \\
7,615
\]

If these are added, the population of the island of Luzon consisted, in 1818, of 1,438,366 individuals.


Names of the Provinces:—

18. Mindoro, comprehending the islands of Mindoro

4670 souls

Marinduque.

9777 \\
Islas de Lubau 4349 \\
18,796 29,632

19. Antique, or the western coast of the island of Panay

3514 souls

20. Capiz, or south-eastern part of the island of Panay

176,091 230,410

21. Cebu, or north-western part of Panay, including the islands—

Bantayan and Sibuyan 3840 \\
Tabon, Tablas, Simara, and Maestra de Campo 3824 — 62,262 120,520

22. Leyte, comprehending the island of the same name, and the islands of Panambo

1065 \\
Pannon 3766 — 40,623 92,165

23. Zebu, comprehending Zebu, and the islands—

Ranjay, and Sibuyan 5235 \\
Siquijor 5748 \\
Bohol 86,341 \\
Bamboo and Siquijor 3478 \\
Panglao 2346 — 160,099 250,817

The Islas Camotan are comprehended in a parish of Zebu.

24. Samar or Yabano, consisting of the island of that name and the island of Capul, with 3013 inhabitants

35,792 99,632

25. Cebaluman, comprehending a group of islands called Islas de Calamianes, which properly do not belong to the Philippines, but to the Archipelago de Felicia or Palawan, and the northern portion of Palawan, called Paragua. The Islas de Camaliman

contain 2,060 inhabitants and Paragua 11,097

13,157 16,032

26. Islas Batanes, which are situated northwest of the Strait of Balintang, or the Great Passage, by which they are divided from Luzon

10,576 8,000

27. Negros, embracing the island of Negros

35,415 35,622

619,378 937,953


Names of the Provinces:—

1818. \\
1827.

28. Capiz, comprehending the eastern coast of the island of Negros

15,957 29,977

29. Misamis, embracing the northern coast east of the Bay of Sindicang. 

26,226 34,583

To these two provinces is to be added the Province of the naval and military establishments at Zamboanga

8,640 10,000

30,823 74,500

P. C., No. 1114.

According to the census of 1818, the whole population was 2,168,707, to which however it was thought necessary to add 5 per cent to correct an accidental small error, which gave the whole amount of the population 2,214,142.

The rapid increase of the population in the period between 1792 and 1837 may be inferred from the number of families paying the tax, which in 1792 amounted to 268,093 1815 amounted to 385,568

1805 — 347,841 1817 — 412,579

1812 — 382,568 1818 — 436,047

and in 1837 they amounted to 654,676.

Almost of the population consists of such a considerable number of towns, as to render it impracticable to give, as far as practicable, the number of inhabitants in each. The census of 1818 was taken not merely to exceed 10,000 individuals. Six places of the last description are noted in the province of Iloilo, in the island of Panay.

Manila, the capital and seat of the captain-general or governor of the island, is built on the eastern shores of the Bahia de Manila, at the mouth of the river Pasig, or the channel by which the Laguna de Bay discharges its water. It consists of two towns with extensive suburbs. The city, Manila, is built on the southern banks of the Pasig, and enclosed by high walls, and a ditch which is connected with the sea. The streets are straight, wide, and well paved. The houses are built of stone, and are substantial. There are several well-built churches and convents. The palace of the governor is not distinguished by its architecture, but the custom-house, or alhoca, is a large and fine building. The city is only inhabited by Spanish families, and in 1818 did not contain above 6875 inhabitants, including the Malay servants of the Spaniards. Close to it on the south are the suburbs of Hermila and Malate, which in 1818 contained 10,550 inhabitants. A well-built small boat was sent from the city over the Pasig to Bidondo, a large place, which however only contains habitations built in the fashion of the Tagala, though it is the commercial town. In 1818 Bidondo contained 3266 inhabitants. Contiguous to it on the beach is Tondo, the capital of the province of the same name, whose population in 1818 amounted to 14,610 inhabitants. At the back of Bidondo are eight suburbs, the population of which in 1818 amounted to 23,467.

The population of all these places together amounted in 1818 to 76,883 individuals. It has been asserted that the population was not less than 150,000, which is probably an exaggeration; but when the increase of the population of the province of Tondo is considered, we may reasonably suppose that Manila at present can hardly contain less than 120,000 inhabitants. The houses in all these places are built of bamboo, and are elevated from 6 to 8 feet above the ground, resting on thick bamboo. The number of cotton slips is considerable, and is said to amount to 30,000, which however seems to be an exaggeration. In the large square of the city, which is more than 100 yards wide, stands the statue of Charles IV. of Spain, of bronze, somewhat larger than life. Ferdinand VII. gave it to the town of Manila in 1824. It is considered a good work, but is too small for the square. Manila contains a royal college for the instruction of youth, a university which was founded by Philip IV. in 1604, a naval academy, an hospital for the poor, and various other religious and charitable establishments.

Cavite, which lies south of Manila, is a well built fortress, situated at the extremity of a tongue of land about two miles long; it protects the entrance of the Espanola, the only harbour in the Bahia de Manila. The arsenal is in that fortress, and vessels are built there. The fortress contained in 1818 only 1926 inhabitants, but the adjacent town of S. Roque contained a population of 1000.

Manufactures.—The Malays use very few manufactured goods exported from other countries, and they have applied themselves to some branches of manufacture with success. The cotton they make very good earthenware, which however is not exported, being much inferior to that of China. But the cotton stuffs, which are made in some parts, are, or were formerly, exported to Mexico. Another branch of industry in which they excel is the plaiting of straw and skins of wood. Hats made of the latter material are much prized and exported. A single hat of the first quality fetches in Manila from 17 to 18 Spanish dollars, or 4l. Mats and similar objects are also exported. At Manila there is a
royal manufacture of cacao, in which 450 persons are constantly employed.

**Commerce.**—The commerce of the Philippines was formerly limited to the mother-country and the Spanish colonies in America. The most important and lucrative branch of the commerce was that of Manila, which was conducted by means of galleons that sailed once a year between Acapulco and Manila. They chiefly carried to America silk manufactures and other goods obtained from the Chinese, and brought in return the produce of the Mexican silver mines. This commerce had little effect on the increase of population and the improvement of cultivation. At that time no foreign vessels, except from China, were admitted to the ports of old Philippines, and the island accordingly advanced very slowly. But since the Spanish colonies in America have obtained their independence, the port of Manila has been thrown open to all commercial nations, and the increase of the exports has been very rapid, as appears from the following table, which shows the quantity of the principal articles exported in 1819, 1829, and 1830:

<table>
<thead>
<tr>
<th>Article</th>
<th>1819</th>
<th>1829</th>
<th>1830</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sugar</td>
<td>11,000</td>
<td>12,000</td>
<td>14,000</td>
</tr>
<tr>
<td>Indigo</td>
<td>7,000</td>
<td>8,000</td>
<td>10,000</td>
</tr>
<tr>
<td>Sapan-wood</td>
<td>8,000</td>
<td>10,000</td>
<td>12,000</td>
</tr>
<tr>
<td>Rice</td>
<td>3,000</td>
<td>4,000</td>
<td>5,000</td>
</tr>
<tr>
<td>Cigares</td>
<td>800</td>
<td>1,000</td>
<td>1,200</td>
</tr>
<tr>
<td>Pearls</td>
<td>100</td>
<td>150</td>
<td>200</td>
</tr>
</tbody>
</table>

Manila carries on trade with Canton, Amoy, and Shang-hae, in China; Awatias in Kamchatka; Acapulco and other ports of Mexico; with four of the ports of the United States of North America; with London, Gibraltar, three ports of France, with Hamburg, the Mauritius, British Hindustan, Singapore, Batavia, Cochinchina, Borneo, and the Sulu Archipelago. The Chinese junks from Shang-hae do not visit any port farther west than Manila. In 1819 the number of foreign vessels that entered the port of Manila did not exceed 61; they were, Spanish 9, Portuguese 4, French 5, English 17, American 10, Chinese junks 13, and Borneo junks 3. The following table shows the number of vessels that entered the port and cleared out from it in 1829 and 1830:

<table>
<thead>
<tr>
<th>Names of the Nations to whom the vessels belonged.</th>
<th>Outwards</th>
<th>Inwards</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spanish</td>
<td>90</td>
<td>51</td>
</tr>
<tr>
<td>American</td>
<td>3</td>
<td>20</td>
</tr>
<tr>
<td>English</td>
<td>3</td>
<td>14</td>
</tr>
<tr>
<td>Dutch</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>French</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>Portuguese</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Hamburg</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Prussian</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Chinese</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>Other vessels, the name of the nation to whom they belonged not stated</td>
<td>78</td>
<td>74.73</td>
</tr>
</tbody>
</table>

This list is very far from being correct, as is evident from the circumstance that the nations to which nearly half the number of vessels belong, are not mentioned. But as it may serve to give some idea of the increase of the commerce of the town of Manila, we have given it as it appears in Meyen's 'Travels.'

The same author states that in 1829 the value of the goods exported amounted to 1,475,034 Spanish dollars (321,883½), and that of bullion and specie to 62,486 Spanish dollars (14,039½); in 1829 the goods to the amount of 1,397,622 Spanish dollars (314,565½), and the bullion and specie to 62,724 dollars (12,012½), and in 1830 the exported goods amounted to 1,497,621 (336,964½), and the bullion and specie to 1,062 dollars (18,548½). The value of the goods imported in 1826 amounted to 1,550,933 dollars (348,960½), and that of bullion and specie to 401,827 dollars (90,411½); in 1829 the former to 1,654,502 dollars (372,263½), and the latter to 440 dollars (94,563½). In 1830 the imported goods were to the value of 1,569,522 dollars (351,567½), and the bullion and specie to the value of 178,063 dollars (40,646½).

European vessels do not visit any other harbours of the Philippines except Manila, but it is very probable that the Bugis and inhabitants of Sulawesi, as well as the Chinese, who have a great number of junks in these seas, visit some of the smaller islands, especially the well-cultivated and populous island of Panay. The coasting trade of the Philippines is very active. It is carried on in small boats, and in still smaller vessels, which are called bangkás, sietas, &c.; and a great number of these vessels are employed in the coasting trade between Manila and the provinces of Yloco and Pangasinan, and the islands of Panay and Zebo. In 1818 the latter cleared out from Manila 637 vessels of that description.

**History.**—The Philippines were discovered by Fernando Magallanes in 1521, who was killed in one of the islands. [Magallanes, 24 July 1521.]

In 1571 Legaspi founded the town of Manila; and as the Malvas of this island were divided into a great number of communities independent of one another, and not accustomed to war, they also submitted to the foreigners almost without a struggle. Thus the Spaniards obtained the possession of this important group of islands almost without bloodshed, and they have preserved it by converting the inhabitants to Christianity, in which they have been perfectly successful, as the Islam and Nestorian religions, which have long prevailed, have all been extinguished. In 1574 the English restored Manila to the Spanish government. The Philippines, together with the Marinas, are administered by a governor who has extensive powers. The islands are governed by the head of which is a governor, or alcalde mayor; and the provinces are subdivided into pueblos, which have also their petty governor, and officers subordinate to him.

(See Maps of the Society's Historical Collections, the Philippine Islands; Kotzebue's Voyage of Discovery into the South Sea, &c.; Meyen's Reise um die Erde; Yedonez of Aragon, Estado de la Poblacion de Filipinas correspondiente al año de 1818; Forrest's Voyage to New Guinea; Moor's Notices of the Indian Archipelago; Berghius, Memoir von den Philippinen und Sula Inseln, and his Map; Calendario de las Islas Filipinas, for 1839, Manila.)

**PHILIPPINES.** NEW. more frequently called the Carolines, is the number of islands in the Pacific, between 133° and 164° E. long., and between 5° and 13° N. lat. In this wide tract of ocean there are several groups of small islands enclosed by reefs, and others are isolated. These are utterly unimportant; some of them are inhabited by Spaniards, who obtained some knowledge of them from the natives who visited their settlement on the island of Guahan (Ladrones), claim the sovereignty of the New Philippines. They have however never made a settlement on these islands, though a Spaniard has occasionally paid them a visit, or a monk has gone for the purpose of converting the natives. Twelve years ago these islands were partly surveyed by the Russian navigator Litke.

The islands, which lie either within the basin formed by the coral reefs, or contiguous to the reefs themselves on their interior side, are all small, and produce hardly any thing except cocoa-nuts and bread-fruit. All the isolated islands are covered with wood, and some rise to the island of Feya rises on the shore to more than 1200 feet, but gradually slopes towards the centre, resembling in that respect most of the lower islands, which consist of a narrow strip of land, sometimes of 20 miles in breadth.

The elevated islands have a great variety of trees and plants which afford food. The cultivated fields contain plantains and aroids; from the root of the latter the inhabitants make the sugarcane; and the island of Feya, the most important, besides the coconut and bread-fruit, especially some kinds of fig-trees, among which is the ficus indica, or banyan-tree. The areca-palm also grows on these islands. The mountains and hils are generally covered with high ferns and various kinds of forest-trees, among which the ficus indica is the most common. The inhabitants belong to the Malay race, and go nearly naked: they are industrious agriculturists and fishermen. They make excellent mats, and canoes of a large size, with which they undertake voyages of several hundred miles,
Philipus was also the name assumed by the emperor Andronicus, who, by pretending to be the son of King Perseus, induced the Macedonians to acknowledge him as their king, and met with so much success as to defeat one of the Roman armies. But he was ultimately driven out of Macedon by Q. Caecilius Metellus, and given up to the Romans by a Thracian prince with whom he had taken refuge. Philipus, M. Julius, a native of Bosra in Trachonitis, according to some authorities, after serving with distinction in the Roman armies, was promoted by the later Gordians to the command of the imperial guards after the death of Mithinus, A.D. 243. [Gordianus; Marcus Antoninus Pius.] In the following year he accompanied Gordianus in his expedition into Persia, where he contributed to excite a mutiny among the soldiers, by complaining that the emperor was too young to lead an army in such a difficult undertaking. The mutineers obliged Gordianus to acknowledge Philipus as his colleague; and in a short time, Philipus wishing to reign alone, caused Gordianus to be murdered (Capitolinus, in Historia Augusta). In a letter to the senate, he ascribed the death of Gordianus to illness, and then contrived to acknowledge him as emperor. Having made peace with the Persians, he led the army back into Syria, and arrived at Antioch for the Easter solemnities. Eusebius, who with Orasios, Zonaras, and other Christian writers, maintains that Philipus was a Christian, states merely as a report that he went with his wife to attend the Christian worship at Antioch, but that Barlaam, bishop of that city, refused to permit him to enter the church, as being guilty of murder, upon which Philipus acknowledged his guilt, and placed himself in the ranks of the penitents. This circumstance is also stated by John Chrysostom. From Antioch, Philipus came to Rome, and the following year, A.D. 245, assumed the consulship with T. P. Titianus, and marched against the Corpi, who had invaded Moesia, and defeated them. In the year 247 Philipus was again consul, with his son of the same name as himself, and their consulship was continued to the following year, when Philipus, according to great splendour of the thousandth anniversary of the building of Rome. An immense number of wild beasts were brought forth and slaughtered in the amphitheatres and circus. In the next, under the consulship of Amilianus and Aquilinus, a revolt broke out among the legions which had just returned from the war against the Persians, and who proclaimed emperor a centurion named Carvilius Marinus, whom however the soldiers killed shortly after. Philipus, alarmed at the state of those provinces, sent his son Decius as commander, but Decius had no sooner arrived at his post than the soldiers proclaimed him emperor. Philipus marched against Decius, leaving his son at Rome. The two armies met near Verona, where Philipus was defeated and killed, as some say by his own troops. On the news reaching Rome, the praetorians killed his son also, and Decius was acknowledged emperor A.D. 248. Eutropius states that both Philipus, father and son, were numbered among the gods. It is doubtful whether Philipus was really a Christian, but it seems certain, as stated by Eusebius and Dioscorus of Alexandria, that in all the places which the Christians enjoyed full toleration and were allowed to preach publicly. Gregory of Nyssa states that during that period all the inhabitants of Necaearea in Pontus embraced Christianity, and that at the time of the emperor Philipus, hisCompatible the only roads were shut up to the residences of the God of the Christians. It appears that Philipus during his five years' reign governed with mildness and justice, and was generally popular. Philipus, called 'Aphrodeutis,' the name of some ancient physicians enumerated by Fabriconius (Biblioth. Graeca). The most celebrated is Philipus of Acracania, the friend and physician of Alexander the Great, who was the means of saving the king's life when he had been seized with a violent attack of fever, brought on by the excessive coldness of the waters of the river Cydnus, Ol. 111, 4 (n.c.333). Parmenio sent to warn Alexander that Philipus had been bribed by Darius to poison him; the king however did not doubt his fidelity, but, while he drank the draught prepared for him, put into his physician's hands the letter he had just received. His speedily recovery fully justified his confidence, and proved at once the skill and honesty of the physician. (Plut. Philip. cap. 8.) Philipus, P. (a.D. 31.) lib. iii. cap. 8, in fine; Plut. cap. 19; Arrian, lib. ii. cap. 4; Justin, lib. xii. cap. 8; Dion. Hal. lib. xxv. cap. 31.) Philipus, Ambrose, was born about the year 1671, and is said to have descended from an old Leicestershire family. He was educated at the Royal Grammar School, Cambridge, and his first printed performance is a copy of English verses in the Collection published by that university on the death of Queen Mary, in 1695. From this date nothing is known of him till the appearance of his 'Epistle to the Pope,' which, Johnson observes, he must have published before the year 1708, because they are evidently prior to those of Pope. They are spoken of in the 'Guardian' (No. 40) as having been published in the same volume of 'Letters,' that is, in Tonson's Miscellany, which appeared in 1705, and apparently they had not been printed before. Philipus's next performance was his 'Letter from Copenhagen' (in verse) to the earl (afterwards duke) of Dorset, March 9, 1709, which was printed in the 12th No. of the 'Tatler' (No. 7, 1709), with an introductory eulogium by Steele, who styles it 'as fine a winter-piece as we have ever had from any of the schools of the most learned painters.' He afterwards translated into Latin verse a little play called 'The Distressed Mother,' which, although little more than a translation of the 'Andromaque' of Racine, was received with great applause, and long continued to keep possession of the stage. Pope, whose year or two before had bestowed high praise upon the 'Letter from Copenhagen,' calling it the performance of a man 'who could write very nobly,' but who had now been divided from Philipus partly by feelings of poetical rivalry and jealousy, partly by his opposite party politics, told his friend Spence that the 'Distressed Mother' was in great part indebted for its success on the first night to a packed audience. The author's Whig friends certainly did their best for the play. It was elaborately praised, before the publication, in the 29th No. of the 'Spectator' (for 1st February, 1712); and Addison, in the preface of the Duke of Devonshire, wrote an epilogue for it, which took so greatly, that, according to Johnson, on the three first nights it was recited twice and never continued to be demanded through the run, as it is termed, of the play. Whenever it is called to the stage, the epilogue is still expected, and is still spoken.' Other 'Spectators' were devoted (Nos. 335, for 26th March, 1712, by Addison) to an account of the strong impressions made by the 'Distressed Mother' and 'A Midsummer Night's Dream,' by Congreve; and (Nos. 338, for 26th March, and 341, for 1st April) to an animated controversy about the merit of the epilogue, issuing of course in a triumphant vindication of it. A short time before, a line from Philip's translation of Sappho's Hymn to Venus,' had been printed, with strong recommendation from Addison, both of that poem and of the author's 'admirable pastorals and winter-piece,' in the 'Spectator,' No. 223 (for 16th November, 1711); and the


Codex of Philipus the Younger. British Museum. Actual size.
and the gunners or careless nature of Steele, by imposing upon him as a serious critique an ironical discourse on Philip's Pastorals as compared with his own, in which, while the superiority in terms of dedication to Philip's subject and execution of which the treatment of the subject were artfully adapted to turn him into ridicule. It is surprising that any degree of simplicity could be so taken in; but Steele at once printed the paper, which forms the 40th No. of the 'Guardian' (27th Feb., 1728) and printed out the 'Splendid Shilling.'"
PHI

PHI is quoted several times by Pliny (Hist. Nat., lib. xx, cap. 13, 24, 65, ed. Tauchn.); Orbisius (De Machinum, cap. iv.) attributes to him the invention of a machine for extracting the juices of the humerous; and (if the same person be meant) Athenæus (Deipnosoph., lib. xii, sec. 12, p. 516) mentions him among those who had written on cookery (φαγοτροφεῖον).

PHILISTUS, a physician, and a person of great wealth and influence. He was very intimate with the elder Dionysius, whom he assisted in obtaining the supreme power, n.c. 406; but having displeased the tyrant, he was banished from Athens, and emigrated to the Adriatic Gulf, probably one of the Greek cities in southern Italy, and did not return to Syracuse till the accession of the younger Dionysius (Plutarch, Dion., c. 11; Diod. Sic., xiii, 91), during whose reign the direction of public affairs seems to have been almost entirely in the hands of Philistus. When Syracuse was taken by Dion, n.c. 356, Philistus used great exertions in favour of Dionysius. He passed over into Italy, and procured from Rhegium alone 500 horses. After making an unsuccessful attempt upon the Leontini, which had declared in favour of Dion, he joined Dionysius in the citadel, and was shortly after killed in a naval engagement, or, according to other accounts, was taken prisoner and put to death. (Plutarch, Dion., c. 53; Diod. Sic., xvi. 16.)

Philistus must have lived to a considerable age, since he was an eye-witness of the Athenian defeat at Syracuse, in n.c. 415, fifty-nine years before his death. (Plutarch, Nic., c. 10.)

Philistus wrote a history of Sicily, which appears to have been a work of great merit, but of which we have only fragments. Cicero, in a letter to his brother (ad Qn. Fr., lib. iii, 13), speaking of the stop of Sallust and the battle of Agrigentum, considers him as resembling though inferior to Thucydides; and in another passage (Brut., c. 85) he also classifies him with Thucydides, and says that these two writers were superior to all others. (Compare De Div. i, 29; Quint., Inst. Vart., lib. i, p. 222, ed. Bipsot.) The Sicilian history of Philistus was divided into two parts; of which the first contained seven and the second four books. (Diol. Sic., xiii. 103.) The first part embraced a period of 800 years, and terminated at the death of Regillus, and the battle of Agrigentum; that is, n.c. 406; the second part, which commenced at the point where the first terminated, contained the history of the elder Dionysius, and terminated at n.c. 363. (Diol. Sic., xv. 89; Clinton's Past. Hell., ii., p. 119.)

PHILLIPSITE, a mineral, the primary form of which is a right rhombic prism. It occurs crystallized only in macies which have much the appearance of haralome; crystallizes: fracture conchoidal; hardness 4++. Scratches carbonate of lime. Colour white, flesh-red, or greyish. Streak white. Lustre vitreous. Transparent, translucent, opaque. Specific gravity 2.90 to 2.2.

This mineral occurs with gmelinite, in the county of Acton, Mass.; also with cassiterite and graphite, at Rome; in Sicily; in the lavas of Vesuvius, and at Marburg in Hesse, &c.

Analysis of the mineral from the last-mentioned place, by Gmelin:—

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Silicon</td>
<td>48.92</td>
</tr>
<tr>
<td>Alumina</td>
<td>22.61</td>
</tr>
<tr>
<td>Potash</td>
<td>2.77</td>
</tr>
<tr>
<td>Lime</td>
<td>6.56</td>
</tr>
<tr>
<td>Water</td>
<td>16.75</td>
</tr>
</tbody>
</table>

101.44

PHILLY'REA, the ϕιλλυρία of Discorides, is a genus of Mediterranean evergreen shrubs, many varieties of which are cultivated in our gardens. They are much like the evergreen shrubs called Alaternus, from which however they are readily known by their leaves being opposite, not alternate. Some botanists regard them as species of olive, to the fruit of which that of the Phyllaries has much resemblance. The hardest and handsomest variety is P. obliqua, the most tender and the least beautiful is P. angustifolia.

PHILLO (Φιλλο), the name of several ancient physicians, the most celebrated of whom was Philo of Alexandria (Biblioth. Graecæ) supposes four, of whom the most eminent was the author of the celebrated antidote called, after his name, Philonium. He left behind him directions for composing this medicine in a short Greek poem, of twenty-six lines, which is cited by Athenæus (Deipnoph., lib. ix, cap. 4, p. 267, ed Kühn.) It seems to have been something like the Mithridate, the Theriac, and the Hiera Archigenia, and was, as Pliny tells us, until the time of the most esteemed of this kind of medicines. Philo was born at Tarsus in Cilicia (Galen, loco citi.), and is supposed to have lived about the beginning of the Christian era.

Another physician of this name, probably contemporary with Plutarch, in the second century of our era, is called Symposius (Sympos., lib. viii, quast. 9, sec. 1) as having said that Elephantiasis first appeared shortly before his time. In this opinion however he is probably mistaken. See a treatise by Jul. Alb. Hofmann entitled 'Tabulae Caracalla ad Celsum usque Historia Critica,' Lips., 1826, 5vo, p. 53.

PHILEI JUDEAUS, that is, the Philo the Jew, was a native of Alexandria. The precise time of his birth is unknown; but he is represented as of advanced years when he was sent as a chief of an embassy from the Jews of Alexandria to the emperor Caligula, for the purpose of pleading their cause against Apion, who charged them with refusing to pay due honours to Cæsar. He went again to Rome in the reign of Claudius, and after this nothing is known with certainty about him.

Philo had a brother employed in the affairs of government at Alexandria, named Alexander Lyssimachus, who is supposed to be the Alexander mentioned in Acts, iv. 6, as a man 'of the kindred of the high-priest.' That Philo was a member of the sacerdotal family is asserted by Eusebius and others, and his own writings indirectly testify that such was the fact. There is no reason to believe that he belonged to the sect of the Pharisees.

Philo was eminent for his learning and eloquence. To the attainments usually made by the Jews of his condition, he added an extensive knowledge of Latin literature and especially of that of Plato. He has been represented by Scaliger and Codsworth as ignorant of Jewish literature and customs; but Fabricius and Mangey have clearly shown that such representation is entirely groundless.

As an interpreter of the Jewish scriptures, he is fond of allegorising, a species of interpretation which had long prevailed at Alexandria. That Philo was a follower of Plato in philosophy there can be no doubt; but it must not therefore be concluded that his views in Philo's or his language Attic. He writes well indeed, but still as an Alexandrian Jew. Mangey styles him 'the chief of the Jewish, and not much inferior to the Christian writers."

The principal editions of Philo are those of Geneve, 1613; Paris, 1640; Mangey, London, 1742; Richter, Leipzig, 1828-1830.

Mangey's edition, in two vols. folio, was printed by the learned William Bayford. It is a magnificent book, and does great honour to the English press. The works of Philo, as they are here presented, amount to forty-seven treatises, with six fragments, upon subjects mostly referring to the Jewish religion. The arrangement of these treatises appears to be arbitrary, and not arranged with a view to reduce them to order. This edition contains two treatises not before published, one on the "Posterior of Cain," from a MS. in the Vatican library; the other on the 'Last Three Commandments,' from a MS. in the Bodleian. It is dedicated to Archbishop Potter, and a valuable preface follows the dedication.

Richter's edition, in 8 vols. small 8vo, follows Mangey's text, but does not give the Latin version. It contains two more tracts of Philo, on the 'Feast of the Basket' and on 'Honouring Parents,' which tracts Angelo Mai discovered in the Laurentian Library at Florence, and published with a Latin version, at Milan, in 1818. Richter's edition contains a reprint of the existing in an Armenian version, supposed to have been made in the fourth or fifth century, and published in Armenian and Latin by John Baptist Auber, at Venice, in 1822 and 1826.

Richter's publication is printed with great care, and may be pronounced the most complete and useful edition of Philo. An ample account of Philo and his writings may be found in the 'Bibliotheca Hagiographica,' and in the 'Bibliotheca Hagiographica,' by Tholuck. Philo's work, with an explanation of it, may be seen in Galen. (De Compo. Medicam., cap. révoc., lib. ix., cap. 4, p. 267, ed.

PHILO. Many other Philos are named; but as they do not appear worthy of particular notice, it may suffice to state
that a catalogue of them, of the number of more than forty, is given in the third volume of the "Bibliotheca Graeca" of Fabricius.

PHILODE'MUS was an Epicurean philosopher and poet, and is mentioned by Cicero and Horace. Fragments of his epigrams are in the Greek Anthology. (Fabricius, Bibliotheca Graeca.)

PHILOL'AUS, a native of Creto, flourished about B.C. 374. He was a Pythagorean, a disciple of Archytas, and the first who wrote on the subject of physics. He said, in an epitome of his three books of Philolaus, with the aid of which he composed his "Timaeus." In several ancient writers quotations are made from Philolaus. (Fabricius, Bibliotheca Graeca.)

The use of the language of the Greeks and Romans in their art, though strictly under the Alexandrine school, was not always the same. The Alexandrine school, which we call grammatical, is a useful and convenient mode of investigation of the subject. Among the Greeks and Romans, the term philology was originally used to signify a love for the investigation of all subjects connected with literature. (Plat. Theset., c. xiv. p. 146; Cic. xivii. p. 161; Cic. ad Dieo. xvi. 21; Ernasti, Clavis Cicero, under Φιλολογία.)

The Alexandrine critics applied the term philologus to a person who was well acquainted with the ancient Greek writings and with the subjects treated of in their works; and we learn from Suetonius (De Illustr. Grammat., c. 10) that Eratosthenes, who lived in the second century before the Christian era, was the first who obtained this name, in contrast with grammaticus and literary learning. In later times, a philologus was merely a person skilled in language, and the word became almost synonymous with grammaticus.

Some modern writers have included under the term philologia the study of Greek and Roman antiquities, but the majority of writers appear to regard the study of the theory of language and of languages in general as the only subjects strictly belonging to philology.

The reader who wishes further information respecting the different meanings attached to the word philology, may consult Ast's "Grundriss der Philologie," Landshut, 1806, and the first essay in Wolf and Buttmans's "Museum der Alterthums-issenschaft," Berlin, 1807.

PHILOIL'NÄ. [SYLLIADAE.] PHILOMEL'IUS. [SYLLIADAE.]

PHILOPOM'LUS. [PHOCIR.] PHILOPOME'N, the son of Cragius or Crausis of Megalopolis in Arcadia, was born about 233 B.C. Having lost his father when he was still a boy, he was educated by Cleander of Mantinea, an intimate friend of Crausis. He was afterwards placed under the tuition of Edeemus and Demophanes, two distinguished cities of Megalopolis, and friends of Aratus. Philopomen studied philosophy and the art of war, of which he was very fond from early youth: 'he considered it,' as Plutarch says, the most important and useful occupation of men, and despised those who were not versed in it. The education he received at Magnesia was engaged in predatory incursions which the people of Megalopolis, the constant enemies of Sparta, made into Laconia. In his leisure he applied himself to agricultural pursuits for the purpose of improving his paternal estate.

Philopomen was thirty years of age when Cleomenes, king of Sparta, surprised Megalopolis by night [CICERO III.], and he was one of the last to leave the town. Some time after, the Achaeans, in order to oppose Cleomenes, having by the advice of Aratus allied them selves with Antigonus Doson, king of Macedonia, that prince came to Peloponnesus, and defeated Cleomenes at the battle of Salamis, B.C. 323, &c., to which victory Philopomen may have contributed. He received a severe wound in this battle. His reputation now rose high, and he was offered by Antigonus a command in his army, which he declined, 'because,' says Plutarch, 'he could not bear to be under the direction of another.' Philopomen now repaired to Creta, and engaged as a volunteer in the war which dis tracted that island. During this campaign he greatly im proved himself in strategy. Aratus died B.C. 213, and Philopomen became the supreme head of the Achæan league, at an extraordinary session of the assembly. He was acquitted of the charge of being a traitor. He formed the discipline of that body, reenforced its strength, and made it completely efficient. In a battle which fought near the river Larissus, he defeated the Achæans and killed with his own hand Demophatius, the Elean general. He also effected many improvements in the tactics and discipline of the Achæan infantry, and introduced the Macedonian order of battle. War having broken out between the Achæans and Machanidas, tyrant of Sparta, Philopomen marched against the Sparta, and defeated him near Mantinea. Machanidas fell in the battle, by the hand of Philopomen. In consequence of this exploit, the Achæans voted him a statue of bronze, which was placed in the temple of Delphi. In 201 B.C. Philopomen was chosen general for the Macedonian war, and, after the defeat of the Achæans at the Granicus, he was sent to Asia by his countrymen to keep up the influence of the Achæans. He was joined by his countrymen and restored the Messenians to their independence as allies of the Achæans. During the subsequent war between Antiochus and the Romans, Philopomen, who was more clear-sighted than most of his countrymen with respect to the policy of Rome, recommended caution, and observed to Diophanes, who was then strategos of the Achæans, that while Antiochus and the Romans were contending with two such powerful armies in the heart of Greece, the duty of an Achæan strategos was to withdraw, instead of lighting up a fresh war at home, rather to overlook some real injuries." This referred to Diophanes' marching against Sparta, which had withdrawn itself from the league. Some time after however the citizens of Sparta, impatient at being cut off from the sea-coast, attempted to surprise a seaport called Las, but were repulsed by the Achæans, joined to the Laconian emigrants who had been driven from their country by a decree requiring Sparta to give up the authors of the attempt upon Las. The pride of the Spartans was roused; they refused compliance, put to death several of their countrymen who were in favour of the Achæans, and sent letters, the one of which stated that the subjugation of the Aitolians, 189 B.C., Philopomen, who was strategos of the Achæans for that year, devastated Laconia. Fulvius came into Peloponnesus, and advised both parties to send messengers to Rome, and to suspend their hostilities. The Achæans sent Diophanes and Lycortas, the father of the historian Polybius, the senate returned an ambiguous answer, which the Achæans interpreted in their favour; and Philopomen, being re-elected strategos for the following year, 188 B.C., marched into Laconia, and again demanded the authors of the attack upon Las and of the withdrawal from the Achæan alliance, with a promise that they should not be punished without trial. Upon this general of the Achæans immediately sent and went voluntarily to the Achæan camp, accompanied by others of the principal citizens of Sparta. As they approached the Achæan camp, the emigrants who formed the Achæan advanced-guard, having taken off their arms, and killed seventeen of them, when Philopomen interfered and saved the rest (sixty-three in number) from immediate destruction. The next day he brought them before the Achæans, who gave them, as the matter generally came to a mock trial, they were sentenced to death and executed. The Spartans in dismay submitted to Philopomen, who dictated to them hard conditions, namely, that the walls of the town should be razed, that all emigrants should be restored, that the Achæans should be driven out of the city, and that the slaves who had been emancipated by Nabis and other tyrants. About 3000 of these refusing to leave the country, Philopomen sold them, and applied the money thus pro-
PHI

duced to rebuilding a portico in Megalopolis which had been destroyed by Cleomenes. But the hardest condition which he imposed on his subjects was his demand that they should abrogate the laws of Lycurgus, and obey the Spartans. This was the only condition which was insisted on by his father. He was a man of peculiar life, and of such habitual firmness, that he had never yielded to any pressure, however strong, as long as he adhered to his old institutions.

Thus, in the year 188 B.C., the laws of Lycurgus were abrogated, after having subsisted for seven centuries, during which they had been the guide of the constitution of Messene. It is true that for a long time previous to their abrogation they had been ill observed, but still they existed, at least in name, and it required only a determined spirit like that of Cleomenes to enforce obedience to them. The Spartans, on the other hand, had been so perverse, that even the ablest and most approved of their strategi, Q. C. Mettellus, on his return from Macedonia, where he had been an embassary, appeared before the council of the Achaeans assembled at Argos, and complained that they had treated the Spartans with undue severity. Aristocrates, the Strategus for the year, was in the Roman interest, and Diophanes also blamed the conduct of Philopomen; but Lycurtus defended his conduct, and the council resolved that the decree concerning Sparta should not be repealed. It was perhaps on this occasion that Philopomen, indignant at the servility exhibited by Aristocrates towards the Romans, is reported by Plutarch to have exclaimed, 'And why in such haste, wretched man, to see an end of Greece?' Enraged at the public opinion, he left the conduct, and the Spartans, on his side, sent two of the restored exiles, who took a violent part against the Achaeans. The senate, having heard both parties, sent Appius Claudi- 

In the year 184 B.C., a general congress of the Achaeans being called, Appius Claudius declared that the senate was displeased with the manner in which Sparta had been treated, the massacre of eighty of its citizens, the demolition of its walls, and the abrogation of the laws of Lycurgus. It was on this occa-
sion that Lycurtus made that eloquent speech in reply which is given by Livy (xxix. 36, 37), in which, after de-

The speech of Lycurtus was generally approved; 'so that,' adds Livy, 'it was easy for Appius to see that the dignity of Rome could not be upheld by gentle proceedings.' Accordingly Appius bade the Achaeans to do with a good grace that which otherwise they would be obliged to do against their will. The senate then declared, that rather than reverse the measure, they would carry it on to its completion, and exchange changes they thought proper. The senate, seemingly satis-

This division of philosophy is in itself of no value, and is merely a matter of history.

The terms philosophy, philosophical, philosopher, are often used in our day with an ambiguity of meaning which, in the hands of some, at least, is more common than in the hands of others. The word philos, from which the word philosophy is derived, means in Greek 'friend,' and the word phiklos, from which the word is derived, means 'aim at.' The word philosophy, then, means 'love of wisdom,' and the word philosopher means 'lover of wisdom.'

Thus every kind of knowledge, the objects of which are things external, has its philosophy or principles, which, when discovered, form the basis of the science, and are applied to things to which they severally belong. But inasmuch as the mind, in striving after this science, must act by its own laws and powers, and as these must in their own form, viewed independently of the external, always be the same laws and powers (for we cannot conceive the mental powers to vary or differ in their essential qualities merely because they are applied to things that are conceived as different), we therefore assume that the mind has its laws and powers, which may be discovered or determined by observation, the laws or principles which govern the relations of things external to the mind, or conceived as external. Thus the human mind, by the necessity imprinted on it, seeks to determine the ultimate foundation of all that it knows or conceives; to discover what it is, and what is its relation to all things. Accordingly it strives to form a system out of all such ultimate laws or principles. Such
a system may be called a philosophy, in the proper and absolute sense of the term, and therefore such, to form such systems. Systems of philosophy have existed in all nations; even in the most uncivilised, in some form, and particularly in the form of a religion; for the highest aim of philosophy is to ascertain the relation of man to the infinite Being, who is, in such countries, the object of all inquiries. In nations which have made further progress in mental culture, the systems of philosophy are not limited to the dogmas of a religion, but those who have leisure, and whose minds are disciplined, have in all ages ventured to transcend the limits of the religious system of their society or age, and to form what are called philosophical systems. The history of such systems is the history of philosophy, which thus varies in a kind of successive steps towards the knowledge of itself, a knowledge which, imperfect as it is, is the accumulation of many centuries, and the work of many contributors.

PHILOSTORGUS, a native of Cappadocia, born A.D. 364, came to Constantinople to complete his studies, and afterwards wrote a History of the Church, in twelve books, from the beginning of the schism of Arius, to A.D. 425. The work is lost, but we have an epitome of it by Photius, independent of a short notice of it in his 'Bibliotheca.' (Migne, 'Patrologia,' Col. 46.) Photius inveighs against the author as a heretic, and an apologist of Arius, Eusebius of Nicomedia, Apollinaris, and other heretics. Photostorgus was a man of general information, and he inserted in his narrative many geographical details of remote countries, and also of Asia and Africa. The author was rather credulous with regard to prodigies, monsters, and other wonderful things, and Photius censures his credulity in attributing miracles to more than a thousand miracles, copies of biographies. The epitome was translated into Latin, with comments, by J. Gothofredus, 4to, Geneva, 1642, and also by H. de Valois. 'Compendium Historiae Ecclesiasticae Philostorgi,' quod auctore Photio Patriarcha, Paris, 1875, with notes, has also been translated into French: 'Abrégé de l'Histoire de l'Église de Philostorge,' Paris, 1676.

PHILOSTRATUS, FLAVIUS, a native of the island of Lemnos, born in the second half of the second century of our era, a native of Lemnos, who first went to Athens, and afterwards to Rome, where he became known and was patronised by the empress Julia, the wife of Septimius Severus, who was partial to the learned. She commissioned him to compile the biography of Apollonius of Tyana from some memorials written by a certain Damis of Nineveh, who had accompanied Philostatus in his peregrinations, and which had come into her possession. Philostatus professes also to have used the works of Apollonius, which were at one time in the possession of Hadrian, and were placed by that emperor in his palace at Antium, together with certain responses of the Oracle of Trophonius, which he had also collected, the biography which he had written himself, and also, according to his own statement, of the narrative of a certain Maximus who had known Apollonius. (Apollonius of Tyana.) The book of Philostatus displays great credit, either real or affected, in the compiler, and a great want of critical discrimination; it also contains many anachronisms and geographical errors. Huet and others have imagined that the object of Philostatus was to write a parody of the life of Christ, but this seems doubtful: the parody, if intended, was too gross; besides which, it appears from the testimony of Lampadius ('Life of Alex. Severus'), that Christ was really worshipped by some of the later heathen emperors, together with Abraham, Orpheus, and Apollo; these being all deities, and Phoeno- men and tutelary genii. That Apollonius of Tyana was a real character, a philosopher, and a traveller, appears from various passages of ancient authors. Vopiscus, among others, says that in Aurelian's day there were at least fifty temples, but his adventures were probably magnified and distorted in course of time, and it is remarkable that no one mentions him until nearly a century after the time of his death. The empress Julia, a Syrian by birth, was probably fond of the Tyanaeans, and Philostatus, intending to entertain her, inserted in his book all the wonderful stories he could collect relative to his hero. It seems however that in the time of the great struggle between the Christians and the heathen, the Dodeciaen and his immediate successors, some of the heathen writers thought of availing themselves of the life of Apollonius as a kind of counterfeit to the Gospel narra-
The Phlegon are small crustaceans, with a circular and depressed cephalon, the front of which is much less advanced than the posterior of the body. Their short and cylindrical tail is slightly bilobed in the flexion, and the buccal frame is nearly circular anteriorly; the principal portion of the external jaw-feet is triangular, as in the other Leucosias, but the palp or ex- tenders, in deriving the name, are somewhat flattened, and this describes a very curved line. Feet of the four last pairs with the tarsus depressed and nearly lamellar. Nothing else remarkable. (M. Edwards.)

Phlegon (Pl. to M. Edwards's Hist. Nat. des Crustacés, p. 20, figs. 9 and 10.) Colour rose grey; length six lines.

Locality.—East Indies.

PHLEGON is the unused secreted by the air passages. [Mucus.] In 13th century, the term includes nearly all materials coughed up from the lungs.

PHLEGON (platform), a native of Travies in Lydia (Suidas), a freedman of the emperor Hadrian. [Vopiscus, in Saraturnio, p. 245; Suidas, p. 8, and in Scevere, p. 71, ed. Salmas., Par., 1620; Photii Biblioth. cod. 97, p. 83, ed. Bekker.) Nothing is known of the events of his life, and the date of his death is uncertain: however, as one of his chronological works, which is no longer extant, carried the history down to Col. 225.2—a.d. 141 (Suidas), he probably lived to the middle of the second century a.d. Some fragments of his works are all that remain; the longest belongs to a treatise Ἐπομονία, De Mirabilibus, a work on miracles, and comprises the twenty-four chapters (some of which are very short), and containing (as might be expected from the title) a great many absurd fables. The same may be said of a shorter fragment of four chapters of the same work, which bears the title of Ηραμοθηκη, and that remains a chapter τῶν Ἐπομονίων, De Olympia, which is supposed by Salmusianus (Ad Spartanum, p. 43) to be the preface to a lost work, 'De Olympionica.' He mentions De Mirabilibus (De longo, p. 233), a hard fragment that is supposed to be a complete copy of this work. The name was given to his work by the learned Dr. Cooper, who has published his name under the etymology: ἀπό τοῦ μελοφωνοῦντος.'

PHLEGON, a term of the English language, is used by some authors to denote the place of a person who has been dead for a long time, and by others to denote a person who was known in his lifetime, as in this event. The name is often rendered by the term 'passage.'


PHLEGRÆI CAMPi, the ancient name given by poets to a volcanic hilly region situated west of the city of Naples, embracing the not yet extinct volcanic craters of La Somma, the basins of the lakes of Agnano and Avernus, the extinct crater called Dei Astruni, that called Monte Barro, and the hill called Monte Nuovo, which was thrown up by an eruption in 1538 on the site of the former lake Lucrinius (Agnano; Avernus); in short, the whole district round Pozzuolo, bounded on the east by the hill of Posi- lipo, which separates it from the basin of Naples Proper, and the Mount Giffoni, which is not tantamount to the Campi Phlegraei, and west, which divide it from the coasts of Cumae and Baie. [BAIE; COME.] On the north this volcanic district is bounded by the plain of Campania. It must not be sup- posed however that the Phlegraei Campi extend beyond the whole volcanic region which extends on the other side of the hills of Baie and south-west to the Monte di Procida, and also beyond the narrow channel called

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Phlorizin, when deposited from a saturated solution, has the form of silky tufts; but when obtained by the slow cooling of a dilute solution, it is in long flat brilliant needles. The taste of phlorizin is rather bitter, followed with slight sweetness; it is scarcely soluble in cold water, but boiling water dissolves it readily. Its aqueous solutions have a greenish or blue-violet color. The spirit also readily takes it up, and at all temperatures; and even when boiling, dissolves only traces of it, though, when mixed with alcohol, it dissolves it very well; it has no action on vegetable colours.

Phlorizin contains no azote, but, according to Stass, is composed nearly of—

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Phlorizin is by various processes, described by M. Stass, converted into phlorizinum, phloretin, and phloric acid: for an account of these, we refer to his memoir contained in the 69th vol. of Annales de Chimie et de Physique.

PHOCA. [Sails.]

PHOCÆA. [IONIA; MARSEILLE.]

PHOCENA, Cuvier's name for the Porpoises, Marine Mammals, and Porpoises. [Wales.]

PHOCAS, a native of Asia Minor, of an obscure family, entered the army under the reign of the emperor Maurice, and attained the rank of a centurion. He happened to be at the head of a company of archers, when one of those mutinies so frequent in the history of the Eastern empire broke out among the troops on that station, and having probably made himself conspicuous among the disaffected, he was tumultuously proclaimed leader of the mutiny, and was invested with the title of Constantine. At the approach of the rebels an insurrection broke out in the capital, and the emperor and his family were obliged to escape in a boat to Chalcis. Phocas was proclaimed emperor and crowned by the patriarch, A.D. 602. Maurice, being taken, was put to death, together with his five sons, and some time after the rest of his family shared the same fate. Phocas sent ambassadors to Khostru II. to announce his ascension to the throne, but the envoys, having learned the circumstances, took up arms to avenge the cause of Maurice, and carried on a destructive war in the Asiatic provinces. Phocas found more favour with Rome. Gregory I. wrote him some complimentary letters in which he extols the condition of the Italian subjects of the empire as being free men in comparison with those who were subject to the Longobard and other kings, who treated them as little better than slaves. These letters of Gregory are given in Life of Phocas by Stahl. Stahl asserted that the Phocas, in his youth, was the champion and crueler of the empire, but we ought to consider that the Roman pontiffs, being at a distance from the Eastern capital, were not competent judges of the frequent insurrections and changes of dynasty which occurred there; and that the severe treatment of his flock was to eminently danger from the Longobards, it was their interest to propitiate the Byzantine ruler for the time being, without investigating too closely his title to the throne.

Phocas remained on good terms with Boniface III. and Boniface IV., the successors of Gregory. He is said by Anastasius, the Papal chronicler, to have acknowledged Boniface III. as the head of all the Christian churches; but that which is better authenticated is his act of donation of the Pantheon at Rome to Boniface IV., to be transformed into a Christian church, A.D. 607.

In the mean time insurrections broke out in several parts of the Eastern empire; more especially in the provinces and capital of Phocas only served to exasperate. Hercules, exarch of Africa, sent two expeditions, one by sea and the other by land, under his son Heraclius and his nephew Nicetas, who joining before Constantinople, gave a universal victory to the Eastern emperor, A.D. 622. Phocas was taken and put to a cruel death by order of the younger Heraclius, who succeeded him in the empire, A.D. 610.

(Under the map of Rome, p. 331, &c.; Gibbon.)

PHOCHIA. [ACID and PHOCHENIN. This last is a peculiar fatty matter contained in the oil of the porpoise, combined with olein and a very small quantity of phocenic acid. To procure it, nine parts of the oil are to be treated with ten parts of alcohol. When the liquor, when it has become cold and clear, is to be submitted to distillation, by which an acid of an oleaginous appearance is obtained: if the acid is separated by carbonate of mag-
PHO

nesia, and the remaining oil treated with cold weak alcohol, the phocin is dissolved by it, and it has the following properties—at 67° its sp. gr. is 0.954; it exhales a weak peculiar odor, and is of a straw color. Parnassus, 32°2/3 of dry phocin obtained by distilling with water and anhydrous caustic potash, is insoluble in water, but very soluble in boiling alcohol.

When 100 parts of phocin are treated with potash, they are converted into 150-155 parts of a hydrated oleic acid, 15 of glycerin, and 32°2/3 of dry phocin.

Phocitic Acid is colourless, liquid at usual temperatures, and in appearance resembles a volatile oil; its sp. gr. is about 0.932. It has a very strong smell, and its taste is sour and penetrating. It remains liquid below 20°, and boils at about 21°. It may be distilled in vacuo without boiling, but when distilled in a retort containing air, it is considerably altered, unless distilled with water, and then it resembles glycerin, in a pure state in the receiver. It is nearly as combustible as volatile oils.

According to Vreule, it is composed of—

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PHOCIAN WAR. [Phippus (of Macedonia); Phocion]

Phocian War. [Schol. to Herod.] Phocian (6° 5) was an Athenian general and statesman, who was a contemporary of Demosthenes. His first appearance in history is at the battle of Naxos, B.C. 376, when Demosthenes was seven years old, being himself twenty-seven. Phocian had Demosthenes four years, and, according to Mr. Thirlwall, is the representative of that party in Athens to which Demosthenes was the constant antagonist.

Plutarch relates that Phocian was the son of a turner, but he disbelieves the story on account of the goodness of his character. Phocian is said to have been of a more timorous mind. Whatever was his rank, Phocian found admission into the school of Plato, and afterwards studied under Xenocrates, whose lessons had perhaps greater influence on his character than ever he himself acknowledged. It is at least a probability that there was a resemblance between Phocian and Xenocrates, while it would be hard to acknowledge any between Phocian and Plato. To a stern and forbidding aspect, a stoical demeanour, and habits of rigid simplicity, Phocian united a kind and generous heart. These qualities secured for him so great a measure of popularity that he was forty-four times elected general, and that in an age when public offices were generally obtained by bribery. He was also heard with so much attention in public, that even Demosthenes dreaded the effect of his terse and pithy harangues.

Plutarch records many of his sayings. There is much wit and point in most of them, indeed they go quite beyond the limits of the subject. His death is B.C. 217, it is said to have occurred when he was on his way to the war. It is said that the last words of sliding, when he was about to embark for the war, were to his wife, 'Tell the people that I die for their country.'

But after all, when biographer and subject lived in an age more distinguished for smartness than solidity, we need not hold these speeches inconsistent with that high character for wisdom which Phocian bears.

The public incidents recorded of Phocian's life are, as is natural, for the head of the peace party, not numerous. He commanded many times and often successfully, but he seems to have set the part of an ambassador rather than a general. His death is B.C. 217, it is said to have occurred when he was on his way to the war. It is said that the last words of sliding, when he was about to embark for the war, were to his wife, 'Tell the people that I die for their country.'

Among these was Phocian's death with the greatest composure, and left an injunction to his son, to preserve no remembrance of the wrongs which Athens had done to his father. As in the case of Socrates, the people soon saw their error, and when his son took the places of political crimes, and the parallel between Phocian and Socrates holds good with regard to the evil times which followed their respective executions, showing public ingratitude to be the parent as well as the child of civil corruption. (Plutarch's Life of Phocian: Thirlwall's Hist. of Greece.)

PHOCION (Φωκίων) was bounded on the south by the Corinthian Gulf, on the west by Doris and the Locris (De Res. iv. 127, 128), and in the west and north it was bounded by the Mount of Pelion, and on the east by Bocotia. The territory of Phocion origin-
intelligence was brought that Eutatius was seized by Philip. The ruins are at the modern Elephanta.

On the sea coast the first town we come to after leaving the Locri Ozolus is Cirra, situated at the head of the Cretan Gulf (Bay of Salamis) and at the mouth of the Pleistus. Cirra was the port of Delphi, from which it was distant 60 stadia according to Pausanias (x. 37, § 4), and 80 according to Strabo (ix, p. 418). This town is frequently confused with Crete, which is designated a separate place by Strabo, and said to have been situated between Delphi and Cirra. The Cirensians were charged by the Delphians with undue exactions from the strangers who came to consult the Delphian oracle. The Amphiactyons declared war against them, which, after lasting for ten years, ended in the destruction of Cirra, B.C. 583, the land of which was dedicated to the god. (Paus. x. 37, § 4.)

The next town to Cirra on the coast was Anticyra, celebrated for its preparation of hellespo, which grew in the mountains above the town. (Strab. ix, p. 418; Paus. x. 36, § 3.) Next to Anticyra was Medeon, destroyed with the other Phocian towns after the termination of the Sacred War and never restored (Paus. x. 36, § 3); and after it the small town of Marathus (Strab. ix, p. 423), beyond which was the Phrygian promontory with a station for ships. The most easterly town in Phocis on the coast was Mychus. (Strabo, ix, p. 425.)

There are few towns of any importance inland, with the exception of Delphi and Eutatia. North-east of Delphi was Lycorea, a place of great antiquity. It is said in the Persian War to have been the residence of Deuaron, and Strabo (ix. 418) speaks of it as more ancient than Delphi. (Compare Paus. x. 32, § 6.) Above Lycorea is Tithorea or Neo, at the distance of 80 stadia from Delphi. (Paus. x. 32, § 6.) Its ruins are near the modern village of Ve- lita. Pausanias (x. 32, § 11) says that the oil of Tithorea was admirable for the composition of perfumed ointments. West of Tithorea, and at the foot of Parnassus, was the ancient city of Lilae, which is mentioned by Homer (Il. ii. 592) as the residence of the Cephissus. It was distant from Delphi 180 stadia across the Parnassus. (Paus. x. 32, § 1.) On the borders of Boetia was the town of Ambyus or Ambusys (Paus. x. 36, § 2; Strabo, x. 423), which is not unfrequently mentioned in history. In the Macedonian war it was taken by Flamininus. (Liv. xxxii. 18.) Its ruins were discovered by Chandler near the modern village of Dys- tomo.

Cola of Phocis.

British Museum. Actual size.

PHOCYIDES, of Miletus, was a philosopher and poet, and flourished about B.C. 535. An admiratory poem (ο��ανα oωοτρεβα) is attributed to this Phocylides; but it is uncertain whether it was written by him or by another of the same name in later times. The reader is referred, for a discussion of this question, to the first volume of the 'Bibliotheca Graecae' of Fabricius. There are three editions of Phocylides, both separate and along with Theognis and others. A convenient and correct edition of these Greek gnomic or sententious poems is that printed by Tauchnitz, Leipzig, 1819, which includes seven fragments of Phocylides besides the above-mentioned poems.

PHOLENOS, PHOCION (Φωκίς, Φώκης). Pho- nicoe—proper, even in its most flourishing state, was a very small country. It extended along the eastern coast of the Mediterranean, from Mount Athos in Thrace, on the north, to Mount Carmel, or Dora, on the south. (Ptolem. v. 15; Plin. Hist. Nat. v. 13, 17; Joseph., Apion, ii. 9.) It was bounded on the east by the mountains Libanus and Antilibanus, from which numerous streams descended, which rendered the land fertile. (Amianthus Marcell., xiv. 8.) The physical char-
acter of this country is more particularly described under SYRIA.

This short line of coast was covered with numerous towns, which were more or less celebrated for their arts and manufactures. The most celebrated in Greece, which was called by the Greeks Acra, and subsequently Ptolemis (St. Jean d'Acce), which the Israelites did not conquer, though it was included in the division of the Holy Land made by Joshua (Josh. x. 36). It was given to Josephus, or Joseph the Arabian, who was stationed there two legions. (Strabo, xvi. p. 728) it was a large city; and under Claudius it became a Roman colony. (Plin., Hist. Nat., v. 17.) The subsequent history and present state of this city are given under Syria.

North of Acre was Tylos, the principal of the Phoeni- cian cities, and north of Tyre, Sidon. Between Tyre and Sidon was Sarepta (Soraphand), which is mentioned in the history of Bijah (1 Kings, xvi. 9) under the name of Za- phmesh. (Comp. Odobich. v. 29; Luke xv. 18; P. Jerome, Antiqui, viii. 13, § 4.) About eight miles and a half north of Sidon was Berytus, a very ancient town with a harbour. (Ptolem., v. 13; Strabo, vii. p. 755; Joseph., Bel. Jud., vii. 3, § 1; Ammian. Marcell., xvi. 8; Mela, i. 12.) It is supposed by some writers to be the same place as Berothai, which was taken by David. (2 Sam., viii. 8.) Berytus was destroyed by Dioctotis Tryphon (b.c. 140), and was rebuilt by Ptolemy Philopator Agrippus, who stationed there two legions. (Strabo, xvi., p. 756.) It also became a Roman colony, and the name of Felix Julia. (Plin., Hist. Nat., v. 17.) The modern town of Baruth or Beirut is still a place of some importance.

BARIUS.

Twenty-four miles north of Berytus was Byblos, situated on rising ground, not far from the sea. It was celebrated for the worship of Adonis. (Strabo, xvi. p. 755; Plin., Hist. Nat., v. 17; Mela, i. 12; Ptolem., v. 15.) Winer supposes (Biblische Rezeuturbiicht, art. Byblos) that the town of Gebel mentioned in the Old Testament (Exxvii. 39; compare Josh. viii. 5) is the same place as Byblos. (By- blos.)

North of Byblos was Botrus; and beyond it Tripolis, which originally consisted of three distinct towns, founded respectively by Sidon, Tyre, and Aradus, and was used by the inhabitants of the different cities of Phoenice as a common place of meeting for deliberating on subjects of public importance. (Strabo, xvi. 754; Plin. v. 17; Diod. Sic., xvi. 41; Mela, i. 12.) North of Tripolis was Ortheas (Plin., Hist. Nat., v. 17; Strabo, xvi., p. 753; 1 Macc., xv. 37), and still farther north Arados, a colony of Sidon, and the most important town in Phocine after Tyre and Sidon, situated in an island of the same name, which is called Arvad in the Old Testament. (Exxvii. 8; Gen., x. 18.) This island was at the mouth of the Eleutherus, and 26 stadia from the mainland. It was only seven stadia in circumference, but was crowded with baths. (Strabo, xvi., 753; Plin., v. 17; Mela, ii. 7.) Opposite it on the mainland was the town of Antarpodas.

The Phoenicians were a branch of the great Semitic or Aramaean stock of nations, and originally lived either on the Red Sea or the Persian Gulf. (Herod., i. 2; vii. 89; Strabo, i. 42.) It is uncertain at what time they emigrated to the coast of the Mediterranean; but it must have been at a very early period, since Sidon was a great city in the time of Joshua (Josh., xiii. 28). The Phoenicians far surpassed all the other nations of antiquity in commercial enterprise. Their greatness as a commercial people was chiefly owing to the peculiar natural advantages. Their situation at the extremity of the Mediterranean enabled them to supply the western nations with the different commodities of the East, which were brought to Tyre by caravans from Arabia and Babylon; while their own country produced many of the most valuable articles of commerce in ancient times. Off the coast the purple fish was caught which produced the most celebrated dye known to the ancients, and the sand on the sea-shore was well adapted for the manufacture of glass. (Plin., H. N., x. 65.) Mount Libanus supplied them with abundance of timber for ship-building, and the useful metals were obtained in the iron and copper mines near Sarepta. In the first they supplied the victorious Britain (Caesarea), and on the north coast of Africa, in Sicily and Malta, they planted numerous colonies, which they supplied with the produce of the East. Their settlements in Sicily and Africa became powerful states, and long opposed a formidable barrier to the Roman arms. (Cassiterides.) By their
alliance with the Jewish state in the time of Solomon, they were enabled to sail to Ophir in the Red Sea, where they obtained the famous Spices and Ophir wood. (2 Chron. xii. 17, 18; 1 Kings, ix. 27, 28.) Herodotus says that they circumnavigated Africa, but there appears considerable reason for doubting the truth of this account. [Araxus, vol. i., p. 172.] It is possible that these writers, that they sailed to America. (Diod. Sic., v. 19.)

The Greeks attributed the invention of letters to the Phoenicians, and there can be little doubt that the Greek alphabet was derived from the Phoenician. They are also said to have invented arithmetic and many of the sciences; but the traditions on these subjects are too vague to enable us to come to any safe conclusion. There can be no doubt however that they were the first to write with a stylus, and that they did so very early. The Tyrians supplied Solomon with all kinds of artificers to assist in the building of the temple at Jerusalem (2 Chron. iii., ii), and the workmanship of the artists of Sidon was celebrated in the Greek towns of Asia Minor as early as the time of Homer. (Hl., xxii. 741; Od., xv. 116.)

The Phoenician cities appear to have been originally independent of one another, and to have possessed for the most part a monarchical form of government. The oldest of these cities was Sidon (Gen. x. 15), but Tyre became in later times the most important, and probably exercised some degree of authority over the other states. After the conquest of Samaria and Judea, the Phoenicians became subjects of the emperors of the Roman, and Persian monarchies. In the wars between the Greeks and Persians, the Phoenicians formed the chief and most efficient part of the Persian navy. They afterwards formed part of the Seleucid empire, and were eventually included in the Roman province of Syria.

The language of the Phoenicians and of the different colonies which they planted closely resembled the Hebrew and Aramaic. Even if we had remnants of the language we could have little doubt that such was the case; but Genesius has satisfactorily shown, from numerous coins and inscriptions, the intimate connection between the Phoenician and the languages of the Semitic nations. The letters of the Phoenician alphabet closely resemble those of the Samaritan. In addition to which it may be remarked, though no further proof is wanted, that Jerome represents (Comment, ad lat. v. 19) the Phoenician language as allied to the Hebrew, and he says the same of the Punic, which, however, he observes, was more remote from the mother tongue. (Comment, ad Gen. xxxvi. 24.) Augustin also makes the same remark respecting the Punic, which was spoken at Hippo, on the coast of Africa. The person who wrote the following passage (Eclog., vii.) that the reader is referred to Genesius's 'Paliographische Studien über Phönizische und Punische Schrift,' 4to., Leip., 1833, and 'Scriptura Linguisca Pheniciac Monumenta,' &c., 4to, Leip., 1837. Among the written language, the Phenician is celebrated as the history of the Phoenicians and Egyptians, in nine books, by Sanchoniatho, of which a Greek translation was made by Philo of Byblos in the first half of the second century of the Christian era. [SANCHONIATHO.]

PHENICIA. [Phenic.] PHENICIOUS. [Pipir.] PHENICOPHAIN'S. [Phenico-Phaen.] PHENICOPHAN'S. The name is known to be the name of a genus of birds founded on the Malkots, or Malachs. Lervallia appears to have been the first who proposed a separation of the form from the Cuckoo, and Mr. Swainson, who in his Synopsis places it among the Crotophagnes, or Horn-Bill Cuckoos, observes that the passage from the Toucan to the Cuckoo seems to be marked by such genera as Phasianophus or Sialornis, where the bill, and in the first, is either much larger and thicker than in the generality of Cuckoos, and in M. Lervallia is alluded to in shape to that of the Toucan, or as Sialornis, where the edges become dentated.

The Generic Character, as restricted by Mr. Swainson, will be more readily understood in the following table of names:

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<th>Genus</th>
<th>Specific Part</th>
<th>Description</th>
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<tr>
<td>Phenicophaenops</td>
<td>P.</td>
<td>Phenicophaenops</td>
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Example, Phasianophus pyrrhophalus. This appears to be the Cuculus Pyrrhophalus of Forster and the Phasianophorus leucogaster, Desm. In July, 1835, Mr. Fraser records a meeting of the Zoological Society of London of a description of a bird of this genus, Phasianophorus Cumingi, belonging to Mr. Swainson's subdivision Dasylophorus, forwarded by Hugh Cuming. Esq., corresponding member from Luzon. Mr. Fraser pointed out that it might at once be distinguished from all the known members of this family by the singular structure of the feathers of its crest and throat; the shafts of these feathers are expanded at their extremities into laminae, which may be compared to the shavings of whalebone. It is a native of the Philippine Islands, and is the only of all the species of Phasianophorus, which is described by Mr. Gould in his monograph, applies the name Pteroglossus ulosus, which is the Pl. Beuarnesiensis of Wagler, but are not curved as in that species.

The feathers of the male are of a rich chestnut and chin, and along the middle of the throat, are grey at the base, have a decided white spot towards the middle, and are terminated by a broad expansion of the shaft, which is of a greyish black colour, with black or greenish reflections. The external edge of this expansion is minutely pectinated. The occiput and sides of the head are grey, passing into dirty white on the cheeks and sides of the throat; the hinder part and sides of the neck and the breast are of a deep chestnut colour; the back, wings, and tail are of a deep shining green colour; all the tail-feathers are broadly tipped with white; the vent, thighs, and under tail-coverts are dusky brown tinged with green; the bill is horn-colour; the feet olive. According to that indefatigable collector Mr. Cuming, this beautiful and interesting bird is named Anisie En Birch in the Albay tongue. The eyes were red, and the pupil large and black.

The length from beak to tail was eight inches and a half, and from head to tail fifty-six inches and a quarter, the measure between the eyes being fifteen and a half inches. (Zool. Proc., 1839.) In the same volume another species, from Malay, Phasianophori viridirostris is described by Mr. Eyton—native name, see Lahit. For the synonyms of Philippus, a genus of the Phasianophori family, the native name, Tana; Bucco truncucata, Gray—native name, Tanda; and Bucco versicolor, RAF.—native name, Tahuor. Phasianophori tricolor, Steph.—native name, Kado bencor; Chlorophasianus (uncus chlorophasianus, Rafinesque—native name, see Lahit); Cratofurti, Gray—native name, Kado Kuchie; and Jawanicus, Horsf.—native name, Kado Api. are also referred to by Mr. Eyton as synonyms of Anisio speciosus from Malay—native name, Chocop Nio.

Mr. G. R. Gray's arrangement of the Phasianus, КуİL, consists of the genera Phasianus, Vieill.; Carapus, G. R. Gray; Rhinorhyn, Vlg.; and Tucucoa, Les.; and the six subfamilies of the Cuculidæ are Indicatorine, Sauroterine, Centropine, Phaicinophae, Coccyzine, and Cuculine.

PHENICOPTERINI'AE, Mr. Swainson's name for his first subfamily of the Anatidae, consisting of the genus Phoenicopeura. In the type position is given to the Phoenicophaeinae by Mr. G. R. Gray. PHENICOPTERUS. [Flamingo.] PHENICOHORNIS, Mr. Swainson's name for a genus of Cerelephus, Cerelephant. [Shrikes.] PHENICORUM, Mr. Swainson's name for the Red-starts. [Sylviae.] PHENICOSIMA, Mr. Swainson's name for a genus of Fringillidae; and placed by him in the subfamily Tana- grine. [Fringillidae; Tanaigrine.] PHENIX (Φείδης), one of the most renowned of the fabulous monsters of antiquity, defined by the Arabs to be malakim l'timo, manmalo l'timo (a creature) whose name is known, its body resembling a duck (Richardson's Arabic and Persian Dict.) It is supposed by some persons to be mentioned in the Bible, Job, xxxv, 18, and Psalm, xcv, 12. In the former passage ית can be transliterated in our version as the sand, but by Bede, Sicut Phanne in the other, which is rendered in our version like the palm tree, is explained to mean the phœnix by Tertullian (De Resur. Cariss, cap. 13, p. 367). Omitting these two passages, which are rightly translated in our version, and therefore have no reference to the phœnix, the earliest author who mentions it is Hesiod (ap. Pliut. De De/Bitis, cap. 11, ed. Tachum.; and ap. Pliut. Hist. Nat. lib. v. cap. 49, ed. Hoern. The phœnix is said to live as a rule a long as a crow. The first detailed description and history that we meet with is in Herodotus, whose words on that account deserve to be quoted at length. "There is also, in his time, a sacred bird, the name of which is the phœnix; I have not myself seen it except in a picture, for it seldom visits them, only as the people of Helipolias say every five hundred
years. And they say that he only comes when his sire dies. And he is, if he is like his picture, of size and shape as follows: part of his plumage is gold coloured, and part crimson; and he is for the most part very like to the eagle in outline and bulk. And this bird, they say, deserves as follows, both for his splendid beauty and for his great and getting out of the sun, he carries him to the temple of the sun; and he covers him with myrrh, and burns him in the temple of the sun: and that he conveys him thus: first he forms an egg of myrrh and of hollow earth, and has the power whether he can carry it; and when he has made the trial, upon this he hollows out the egg, and puts his sire into it, and covers with other myrrth that part of the egg where he had made the hole and put in his sire; and when this sire lies in the egg, and is upon it, (as it is the same [as it was before he was hollowed out]) and having covered him up, he conveys him to Egypt into the temple of the sun. Such are the things which they say this bird performs. Such is the story as told in Herodotus, and it is substantially the same as what was afterwards, though with various embellishments, repeated and alluded to by the following classical authors, besides those already referred to—Achilles Tatius (De Leuc. et Citi, lib. iii., cap. 25, p. 147, ed. Mitscherlich.), Aristides (Orat., tom. ii., p. 107, ed. Jebb, et ibi Schofiast., Artemidorus (Onomast.), lib. iv., cap. 49, p. 228, ed. Rigalt.), Ausonius (Eidyll., 16, v. p. 555: and Eidyll., 11, v. p. 434, ed. Toll.), Claudian (Eidyll., 1, 'De Phoenix,' in Prim. Consol. Sidh., lib. ii., p. 414, ed. Bochart, Anon.) Eutych., lib. ii., cap. 46, sec. 3, De Arcae posterit., lib. v., cap. 27, Dionesius Laertius (De Vit. Philos., lib. ix., cap. 11, sec. 9, and 79), Lampridius (in Heligab. cap. 23), Lucian (Herom., cap. 53; Nonag., cap. 44; De Mortis Perigr. cap. 27), Oppian (De Avocato, lib. ii., cap. 28, ed. Bochart, Apoc., lib. ii., cap. 28, ed. Bochart, and 29, 305), and Solinus (Polyhist., xxxii. 11). Of these passages perhaps the only one curious enough to be particularly noticed is that in Lampridius, who tells us that Heligabius promised his guest a phoenix, but was however obliged to be content with a dish of the tongues of phœnicopters (or flamingos).

But it is not only in heathen authors that this fable is to be found; it is mentioned and believed by the Jewish Rabbinists (ap. Bochart, Hier., cap. ii., lib. vi., cap. 5, p. 818) that in the passage of Job quoted above some of the Rabbs read the, the instead of the, the sand. The very words of several of these writers may be found in St. Clement's letter to the Corinthians (cap. 4, sec. 11), and to the Ephesians (St. Clement of Rome, St. Cyril of Alexandria, and St. Athanasius); that by some writers the date is extended to one thousand four hundred and sixty-one. The several races when the phoenix has been seen are fixed by tradition. The first, we are told, was that of the Egyptians; the second, and in the period when Ptolemy, the third of the Macedonian race, was seated on the throne of Egypt, another phœnix directed its flight towards Helopolis, attended by a group of various birds, all attracted by the novelty, and gazing with wonder at so beautiful an appearance. For the truth of this account we do not presume to answer. The facts lie too remote; and covered, as they are, with the mist of antiquity, all further argument is of little avail. The reign of Ptolemy II Ptolemaus (duck) is, as it were, the intermediate space is not quite two hundred and fifty years. From that circumstance it has been inferred by many that the last phœnix was neither of the genuine kind nor of the same period, and that that of Athens (1200 B.C.) was a fictitious one. Some of the species were not observed to direct its motions. It is the genius, we are told, of the true phœnix, when its course of years is finished, and the approach of death is felt, to build a nest in its native clime, and there deposit the principles of life, from which a new progeny arises. The first care of the young birds, as soon as they are so begotten, is to perform the obsequies of its father. But this duty is not undertaken rashly. He collects a quantity of myrrh, and to try its strength, makes frequent excursions with a load on his back. When he has made his experiments, and ascertained a long tract of air, and gains sufficient confidence in his own vigour, he takes up the body of his father, and flies with it to the altar of the sun, where he leaves it to be consumed in flames of fragrance. Such, then, is the belief of the ancients concerning the Phoenix. It has, no doubt, a mixture of fable; but that the phoenix, from time to time, appears in Egypt, seems to be a fact sufficiently asceritained.

After the time of Tacitus the fable of the phoenix is repeated or alluded to by the following classical authors, besides those already referred to—Achilles Tatius (De Leuc. et Citi, lib. iii., cap. 25, p. 147, ed. Mitsu-
PHŒNIX, a southern constellation of Bayer, which may be best described as close to (but farther from the south than) the bright star Eridanus (Achernar). Its principal stars are as follows:

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<th>No. in Catalogue of</th>
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<tr>
<td>Character.</td>
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<td>(1906)</td>
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<td>(1935)</td>
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PHŒNIX, a genus of palms, which has been so named from one of its species, the date-tree, having been called so by the Greeks: this name is thought by some to be derived from Phœniea, because dates were procured from thence. The genus is common in India and in the north of Africa, and one of the species grows in Arabia, the lower parts of Persia, and along the Euphrates to Syria. The genus is characterised by having flowers dioecious, sessile, in a branched spadix, supported by a simple spathe; calyx urceolate, 3-toothed; corolla 6-petalled; stamens 6 or 3; filaments short, almost wanting; anthers linear; female calyx urceolate, 3-toothed; corollæ 3-petalled, with the petals convalute; pistil with three ovaries, distinct from each other, of which one only ripens; stigmas hooked; drupes one-seeded; seeds many, on one side, marked by longitudinal furrows; albumen reticulate; embryo in the back of the seed; palms with spines of a moderate height and ringed, or marked with the scars of the fallen leaves; fronds or leaves pinate, pinnae or leaflets linear, with the spadix bursting among the leaves, surrounded with an almost woody two-edged sheath; flowers yellowish-white; fruit soft, edible, of a reddish yellow colour.

Phoenix dactylifera, or the date-tree, is one of the best known and probably the earliest known of the palms, and though belonging to a family which abounds and flourishes most in tropical regions, itself attains perfection only in Comparative high latitudes. It is said that the name Palma was originally applied, as we may infer from its being common in Syria, Arabia, the lower parts of Persia, as well as Egypt and the north of Africa, whence it has been introduced into the south of Europe, and cultivated in a few places, not only as a curiosity, but on account of its leaves, which are sold twice in the year, in spring for Palm Sunday, and in September for the Jewish Passover; and also, from the name not being applicable to the other species known to the antiquites, as it is considered that the bunches of dates were likened to the fingers of the hand, as appears from the present specific name, dactylifera, from the Greek dactylus, a finger. It is the palm-tree of the Book of Ecclesiastes, and is celebrated as a tree ofJudaea, as we see in coins with the inscription of Judæa capta. It is found in oases in the desert, and round Palmyra, which is supposed to have been named from its presence. This appears indeed to be only a transliteration of the Oriental name, which is Tadmor,
and the fruit ripe in May. The leaflets are wrought into mats for sleeping on, and the common petioles are split into three or four, and used for making baskets. The small trunk is generally about fifteen or eighteen inches long, and about in diameter. It is distinguished in its substance by a faint tinge of farinaceous substance, which the natives use for food in times of scarcity. To procure this meal, the small trunk is split into six or eight pieces, and dried and beaten in wooden mortars. The farinaceous part is detached from the wood and then it is sifted, to separate them: the meal is then fit for use. The only further preparation which this meal undergoes is the boiling it into a thick gruel, or conji. It seems never to be possessed by a large sack, which is obtained in a similar manner from another palm, is not palatable when boiled, but it has saved many lives in times of scarcity.

PHYLLODICTYON. [Tecophilanth.]  

PHYLLODICTYON. 

PHOLADIDÆA. [Phol. p. 109.]  

PHOLADOMY. 'Qu'est-ce que le genre Pholadomie des quelques auteurs Anglos? C'est ce que nous ignorons; il paraît qu'il est établi avec une coquille fossile cutitmforme, très-large et très-bâillante en avant.' We will endeavour to answer the question thus put by M. de Blainville in his "Malacologie."

The genus Pholadomya is a most interesting form, for the knowledge of which we are indebted to Mr. G. B. Sowerby, who described it from a recent species brought from the island of Tortola by Mr. Nicholson, and in the possession of Mrs. Mason, from whom it passed into Mr. Broderip's collection, and consequently is now in the British Museum.

The discovery of this recent species led at once to the more perfect knowledge of several genera of fossil, whose genus, as Mr. Sowerby observes, in his Genera (No. xix.), was before exceedingly doubtful, inasmuch that from a consideration of their external appearance alone, authors had been induced to place them in several genera, to none of which they really belonged; and he refers to Sowerby's Mineral Descriptions, from which the above genera have been derived. The different parts of the species are figured under the names Caridea, producta, obtusa, lyrata, deltoidea, and marginata; and Lutraria lyrata, ovata, ambiguus, and angustata. These occur in several rocks of the oolitic series, particularly those of the Barriball formation, in which the shell, as large as in the Lisa, the London clay, and the Sutherland coal-field; also in the dark-coloured clay at Alum Bay.

Generic Character.—Shell very thin, rather hyaline, transverse, ventricose; inside pearly; posterior side short, sometimes very short, rounded; anterior side more or less elongated, gaping; upper edge also gaping a little. Hinge with a small, rather elongated, triangular pit, and a marginal lamina in each valve, the outer part of which is attached the rather short external ligament. Muscular impressions two: these, as well as the muscular impression of the mantle, in which there is a large sinus, are indistinct. (G. B. Sowerby, Jr.)

The same zoologist remarks that this shell is the only instance known to him in which the umbones are so approximately to be worn through by the natural action of the animal in opening and closing its valves. He further observes that it is very rare in the British Museum, and that amongst the many species of Pholas and Anatima of Lamarck, but most of the fossil species have been arranged as Lutraria. We have called it," says Mr. G. B. Sowerby, "Pholadomya with reference to its resemblance to shells which he has described, as Pholadites and Myea. It is related to Punctaria in the characters of the hinge, but may be distinguished from that genus by its thin, semitransparent, pearly shell; from Pholas and Anatima, by its external ligament, and its want of external and internal accessory valves; and lastly, from the La-
cicular impressions. Lamarck places the Pholades among the Dimyarias, and M de Blainville sees but a single muscular impression; but M. Rang, speaking for himself, says that he has no doubt that these shells have two muscular impressions, which he has positively traced in Pholus costata, in following the pallial impression from its departure from the posterior muscular impression, which is always sufficiently evident, to the point where the former terminates anteriorly. There a small irregularly rounded impression may be very well distinguished. It has, continues M. Rang, been equally observed by M. Charles des Moulins in the same species, but science owes to that naturalist an observation relative to the Pholades perhaps even more important; it is, that these shells sometimes are seen accompanied by a calcareous tube, applied, like that of the Gastropods, to the internal wall of the cavity which they inhabit. M. Rang had not been able to verify this fact in relation to living species; but M. des Moulins showed him several fossils from Mârignac, in which he completely recognised this important character, which more firmly establishes the generally admitted relationship between the Pholades, the Teredinidae, and the Fistulinae. M. Rang further remarks that there are some species of Pholades which seem to lead to Teredo. These shells inhabit stones, madreporas, wood, and sometimes mud or sand (vase). When the reflux of the sea leaves them, and the animals are deserted, they eject through their siphon to a considerable distance the water contained in their mantle, and which bathes the gills. (Manuel de l'Histoire Naturelle des Mollusques.)

*We believe*, says Mr. G. Sowerby, *that all the shells of this genus are furnished with a greater or less number of accessory valves, which appear to be caused by the deposition of shelly matter (within the epidermis, and connected with the valves by that membrane), whereas such valves were necessary for the security of the invertebrates; they are consequently very various in form, and placed in different situations in the different species, though in most cases they are placed near the hinge, and have ever been considered to be substitutes for these shells for the permanent ligament of other bivalves: we must, for the present, withhold our assent from this opinion, because, on account of the situation in which they live, the animals inhabiting these shells can have very little occasion to open their valves. Whether or not there is any permanent ligament in this genus, as we have never observed the animal alive, we cannot undertake to determine: Turton says it has none; Lamarck takes the contrary view, that is the accessory valves covering and hiding the ligament. As far as we can form an opinion from dried specimens, we cannot consider the substance to which these valves are attached as the ligament, but as part of the adductor muscle; nevertheless we think we can in some species perceive a very small internal ligament, attached to two unequally sized small curved teeth (one in each valve), placed in the same situation as the hinge teeth of common bivalves. The adductor muscle forms two principal impressions, one of which is placed on the reflected margin, over the umbones, and the other about half-way between the umbones and the longer end of the shell: there is also a large sinus in that narrower part of its impression by which the mantle is affixed; and, at the angle that is formed by this sinus, very near the basal margin of the shell, the impression is somewhat expanded. The principal differences between Pholus and Teredo consist in the latter forming a shelly tube behind its valves, and in its being destitute of accessory valves; moreover the two valves of this latter, when closed, are nearly globular: the same characters distinguish Pholas from Xylotrya of Leach: Xylophaga of Turton, which has accessory valves, and which does not form a shelly tube, is however destitute of the internal curved tooth, which is common to Pholus and several Turboideae. (Genera, No. xxiii.) The same author (loc. cit.) remarks that he had endeavoured formerly to show that Gastrocoely belongs rather to the Turboideae than to the Pholadaires; and he asks whether it would not have been more consistent with the rules of association apparently entertained by Lamarck, if he had united the Petricoles, Verneirurapiceae, and other teretibrating conchifers, which do not form a shelly tube open at one or both ends? He also inquires if the commonly called Pholas pappacea (a shell which had lately become pretty generally known) may not be considered as the type of the connecting link between the two families, inasmuch as it has the general form and characters of a Pholus, and apparently comprises a shelly tube at one end?* Dr. Leach divided the Linnaean Pholades into several genera; but as his distinctions consisted principally in the number of the accessory valves, Mr. G. B. Sowerby has not adopted any of his genera: they may, according to Mr. Sowerby's opinion, appear to be calculated for divisions of the same genus, but are not sufficiently distinct to warrant such formations. Mr. Sowerby admits indeed that some species (Pholus clavata, Lam., for instance) may, on account of their being closed at both ends, be distinguished generally, because this circumstance implies a difference in the habits of the animal by which they are formed; but as they are therefore, he remarks, has been seized by Dr. Leach, and upon it the doctor founded his genus Martiensa, an example.
which Mr. Sowerby says he should have been induced to have followed, had he been convinced of its necessity. The same acute and experienced naturalist, upon the occasion of describing several new species of Pholus from the collection formed by the zealous Hugh Cuming, chiefly on the west coast of South America, and the islands of the South Pacific Ocean, prefaced his descriptions with the following admonition, which is well worthy of the attention of those who are interested in this branch of natural history:—

"The utmost caution is necessary in the examination and description of the various sorts of Pholadus, on account of the extraordinary difference in the form of the same species in different stages of growth. The addition of accessory valves, as the increase in the number of the valves, is rarely observed, in order to give against a confident identity in their number and form; and though I might be considered guilty of asserting a truism by stating that the difference in size of different individuals of the same species may, and sometimes does, mislead the tyro in the science of malacology—let such difference should mislead the adept also, let him too proceed cautiously; and where he finds a fully grown shell of half an inch in length agreeing perfectly in proportions and characters with another of two inches long, let him not conclude that it is a distinct species; but if he can find no other difference except that which exists in their dimensions, let him consider the one a giant, the other a dwarf. The thickness of these young shells of Cypreae is not uncommon to observe young shells of three inches in length, and fully grown ones of the same sort only one inch in length; likewise of the well-known British Pholadus, there are individuals quite in a young state of growth in the Thames so slight that they are placed in the same species not more than half an inch long. For instance in demonstration, I need only refer to the Pholus paragrapesus, so abundant at Torquay, of which the young shells have been considered by many as a distinct species, and have been named by Dr. Turton Pholus lamellolus. This varies in size exceedingly, so that it may be obtained both in an incomplete and young state, and in a fully grown condition, and in two distinct stages of length. The circumstance of its having rarely occurred in an intermediate state of growth, when the anterior opening is only partly closed, and the accessory valves only partly formed, led Dr. Turton and others to consider the young shell of this species in no way intermediate.

Other similar instances will be shown in the course of the present concise account of some hitherto undescribed species of the same genus brought to England by Mr. Cuming. (Zool. Proc. 1834.)"

Before we proceed any further, it becomes necessary to notice the genus Jouannetia of M. Ch. des Moulins, which is thus characterized:

"Shell spherical, cuneiform, equivale, inequilateral, hardly gaping posteriorly, but widely open anteriorly; valves solid, short, curved, pointed below, striated obliquely, the strie converging towards a median furrow; umbones but little distinct, with accessory pieces soldered over them; a very large, smooth, delicate, fragile scutcheon enveloping, with age, all the anterior part, formed of two rather unequal halves, fitting (a enfoulant) one in the other, each soldered by one of their edges to one of the valves, and closing in this manner the anterior gape of the shell; no ligament nor hinge (engrenage); a setiform vertical appendage proceeding from the best safeguard, the most resistant, the most valuable, and occupying a third of its height; muscular impressions still unknown; pallial impression very strong, and deeply excavated backwards. Accessory pieces, but soldered; no enveloping calcareous tube, the large scutcheon occupying its place."

M. Rang speaks highly of the discovery of this genus by M. des Moulins, and having studied it with that naturalist, he pronounces it to be very distinct from the Pholadus, and its affinities do not exist between the ordinary Pholadus and Jouannetia, to which it leads so naturally by its valves. Jouannetia, he observes, has no enveloping calcareous tube, as sometimes happens to the Pholadus, & c.; and though only one species has been described in Europe, that on the islands of Martinique, in the interior of madrepores, & c.), he does not think that a similar tube ever exists, if the amplitude and disposition of the scutcheon, which appears to him to take its place, is a generic character.

1. M. Deshayes, in the last edition of the 'Animalia' of Verneuil, does not think quite so highly of the genus Jouannetia, as we shall presently see. With regard to the accessory pieces of the Pholadus, he considers that they are no other than vestiges of the complete tube of the Tere- dinae, the thickness of which, and the fact that those pieces are larger in proportion as the shell is more gaping posteriorly, and the external parts of the ani- mal of greater size, so the shell of the Terecinus being able to cover a very small part of the animal, that defect is supplied by a great tube: on the contrary, in proportion as the shell of the Pholadus is better closed, the number and size of the accessory pieces diminish. M. Des- hayes then goes on to remark that, according to Lamarck, these pieces correspond with what he has called ligament, but M. Deshayes is convinced, both from the observations of Poli and his own, that the Pholadus have no true ligament; and the same is the case with the Terecinus. A part of the anterior muscle is inserted on the cardinal callousities, and occupies the place of the ligament. A posterior expansion of the mantle glides between these callousities, penetrates into the porous tissue placed below the callousities, and forms externally a fleshy surface more or less great, on which the posterior pieces are fixed. With regard to the internal appendages springing from the umbones, and which have somewhat the form of little spoons, they are buried in the heart, and the interior. M. Deshayes dismisses the genera Xylophaga and Jouannetia very shortly; the first he rejects as useless, nor can he allow that the last has more just claims to admission. If, he observes, we consider the ligament of the Terecinus as a true ligament, such was not the case, and the form of the species adopted, there would be as good reason for making a par- ticular genus of each of the species of Pholus. Mr. Swainson makes the Pholadus the first family of his tribe Macrostracidae, and thus characterizes that family:

"Shell bivalve, sedentary, generally perforating, opening at one or both ends; the valves often prolonged into a shelly tube, sometimes of great length, representing the Tubularbranchia."

Under this family he assembles several forms, and makes it consist of the following genera and subgenera:

1. Aspergillum; including the subgenus Aspergillum, Clamagela, and Pleurostratia.
2. Gastrochina (Gastrochero), Lam.
3. Pholidosta, Sow.
4. Pholus, Linn., with the subgenus Pholus Linn., Pholadus, Leach, Martesia, Leach, and Xylophaga, Sow.; and
5. Teredo, Linn., with the subgenus Teredo, Linn., and Terechina. (Malacology, 1840.)

Locality, Habits, Organization, &c. of the genus Pholus. The geographical distribution of the Pholus is very wide, and their habit of boring hard substances, such as indurated mud or clay, wood, and stone, renders them, as well as other teredineous testaceans, an object of anxious interest to those who construct submarine works. The Breakwater at Plymouth was soon attacked by the Pholadus, and in Dr. Goodall's fine collection, now dispersed by the hammer, there was a specimen from the Breakwater perforated by these teredines. Wood is also attacked by this genus, and submarine piles are consequently exposed to their ravages. To counteract their operations in the latter substance, nails closely driven into the submerged part of the timber, as in the piles which support the pier at Southampton, seem to be the best safeguard (de meilleur miis) which can be adopted. The young Pholadus excavate burrows in the substance which chance has opposed to them, or to which choice—for it is not improbable that the young shell-fish may in some cases have the faculty of making the selection of the material in which it is to pass the whole of its life—has directed it.

The mode in which this operation of boring is conducted is not quite satisfactorily accounted for; but the better op- tion seems to be that as in so many of these Pholadus, the currents of water produced by the vibratile cilia of the animal, as noticed by Mr. Garner, are the principal agents. [Lithophaga: see also Clavagella and Gastro- chera.] Mr. G. R. Allen, of Falmouth, reports Pholus acuminata, found in Dr. Cuming's at Panama in limestone at low water, notices one specimen in that gentleman's collection, as demonstrating a fact of considerable importance to geologists: it is in argillaceous limestone, very much resembling lima, and, in forming the cavities in which it re-
sides, it has, by such chemical process as, in Mr. Sowerby's opinion, frequently takes place, absorbed a much great quantity of the rock than could be retained or converted; this it again deposited at the upper part of the cavity, and thus the rock is recomposed. (Zool. Proc., 1834.) Mr. Garner, in his valuable paper 'On the Anatomy of the Lamellibranchiate Conchifera' (Zool. Trans., vol. ii.), marks, that there is a cartilage between the two small siphonal processes of the hinge in the Pholas candidus, other species which have no rudiment of it, and allied genera which have a particular character of articulation; considers the motion of the valves as but a secondary cause in the perforation of the substances in which these animals are found. His strictures on the opinions of M. de Belvoe and Mr. Osley with regard to the crypt of Saxien will be found under our notice of that animal in the article Lithophagidae [vol. xiv. p. 51]; and he follows them by observing that Turton says the valves of the Teredo not correspond with the bore, though Mr. Garner thin that in this case they do act as mechanical instruments but, he adds, the Pholas candidus is often found in the timber, though its valves do not seem in the least adapted for any boring or filing. See further on this point Mr. Garner's observations on the subject of a supposed volatile fluid in the description of Lithodoma. [Mytilidae, vol. xi. p. 69.] Mr. G. B. Sowerby had previously (Genera, N. xxiii.) remarked that the manner in which these other perforating shells produce the cavities in which they have long been subject to controversy, and observes that, as he did not wish to add himself to the number of disputants, he would only state that the effect cannot be produced by rotatory motion, since the cavities are fitted so as to be perfectly smooth on their outside and capable of producing these cavities with others whose external surface are rough like a file; nor did he think it could be by the chemical action of any solvent, since the same effect is produced on wood, limestone, and sandstone. He stated that he had been informed that the Teredo eats its way into wood, and inquires whether the Pholas and others perforate wood, chalk, limestone, and even sandstone in the same manner or have some of them the power of dissolving stone while others form their cavities by eating away wood? Mr. Garner (loc. cit.) mentions Pholas as one of the genera in which supplementary branchial exist, and as one of the forms in which a disposition of those organs different from that observed in Anomia, Pecten, Arca, Modiolus Unio, and Cardium, &c., where no complete division of the siphon of the mantle exists, is found. In Pholas the branch are prolonged into the inferior siphon, and as they are separated from the base of the foot within nor from the mantle without, the water drawn in through the inferior orifice must make its exit by the same or by the anterior opening: but water is likewise drawn in by the superior orifice, and so gets access to the interior interlamina spaces of the branchial (oviducts of some); and by the superior siphon the ovum feces, and secretions are discharge. He also remarks, in another part of his paper, that the oviduct is distinct from the sac in Modiola, Mytilus, Lithosmus, &c., whilst in Tectila, Cardium, Macra, Pholas, Mytilus, and most others, the ovum are discharged into the excretory organs. To return to the perforating habits of these animals. The accompanying cuts will convey some notion of the ravages upon the substances which they penetrate:
This species, which is found in cylindrical cavities eaten in wood, bears some resemblance to *Teredo*, but is without the shell tubule, nor has it the posterior hiatus.

**Pho. papuensis.**

This is the genus *Pholasidea* of Leach.

**Fossil Pholades.**

Mr. G. B. Sowerby (Genera) observes that fossil *Pholades* are rare, but that they occur in the calcareous gravier and contemporaneous formations, in several places, and also in our creag; several very interesting speciments, he adds, are found in Italy and in Tournaine, as well as in the vicinity of Paris, where and several other perfect shells, and has been discovered in the fossil state in the cavities which they have themselves formed. M. Deshayes, in his Tables, gives the number of fossil species (tetricary) as nine; but in the last edition of Lamarck only two appear: one, *P. candida*, recent and fossil; the other, *Photus Jouberti* (Jouannetia), fossil only. In Professor Phillips's Illustrations of the Geology of Yorkshire, we find *Photus recinita* and *P. constricta* recorded; the first from the coralline oolite, the second from the Speeton clay. In Dr. Pitton's list (*Strata below the Chalk*), we find *Photus gigantea* gigantea and *pries* noted; the first from the gault and the lower green-sand, the second from the lower green-sand and Blackdown.

**Photus montforti**. M. Lesson's name for a genus of birds placed by Mr. Swainson in the subfamily Coreidea of his family Corvidae.

**Generic Character.**-Bill large, strong, considerably compressed; very high at the base, gradually narrowing towards the end; the front advancing on the crown of the head, and considerably dividing the frontol plumes; upper mandible distinctly notchted; the smaller eye laid in a deep depression of the bill; the aperture long, oval. Frontal feathers short, reflected forwards. Tail moderate, rounded; the feathers broad, truncate, and ending in setaceous points. (Sw.)

**Example.** Phonygama Lessonia (Voy., pl. 13.)

**Pho. yONA.** [Pomognada.]

**Phormium**, a genus of plants of the natural family of Lilaceae, tribe Agapantheae of Endlichle, Arsparage of Lindley, contains only a single species, which is remarkable for its useful product, so well known under the name of New Zealand flax, and which is found indigenous in New Zealand and Norfolk Island. The genus is characterised by having a coloured tubular perianth, of which the tube is very short, and divides into six segments, of which the three inner are the longest; stamens six, inserted into the base of the tube, ascending exerted; capsule oblong, three-crenated; seeds very small, compressed; embryo in the centre of the seed, longer than half the albumen, with its radicle next the umbilicus. The root is tuberous, fleshly, and bitter tasted; the leaves are numerous, all radicle, linear-lanceolate, five or six feet long, and from one and a half to two inches broad, two-rowed, equitant at the base, leafy, and very tough. Its flowers are numerous, showy, yellow-coloured, arranged on a tall branch panicle.

The leaves of this plant yield a very beautiful and a very strong flour, which has been of late imported in considerable quantities under the name of New Zealand flax. It was expected to be much more useful than it has proved to be, in consequence of its having the defect of breaking easily when made into a knot. Being a plant of high southern latitudes, it was supposed that it might easily be grown in different parts of Europe. The French have attempted to cultivate it near Cherbourg, Toulon, and other places, and it has been introduced into Ireland, of which the most insular climate is probably favorable to its growth. It grew remarkably well for a number of years in the Chiswick Botanic Garden, but was killed by the severe winter of 1837-38. Its cultivation has also been attempted in Australia, but has not yet succeeded to any extent.

**PHOSPHORUS.** Sowerby's name for the trochioid form which is loaded with pebbles, shells, &c. (*Trochus agglutinans* of authors, genus Omnus, Humph.), generally known to collectors by the name of Carrier Shells. (*Trochus.*).

**Photus De Montforti**. M. Lesson's name for a genus of turbatid gastropods with a turritell thick shell, which is carinated and varicose; spire pointed, but not produced; aperture rounded or oval; outer lip ridged internally; columella with an oblique plac or plaits; canal short, with the external form of a short neck. The opening of the columella brings this shell into the group of *Enuto montana*, and the raised external surface of the columella very near to *Buccinum*; but the general aspect of most of the species more resembles that of *Murex*; there can hardly however be said to be any true varices on the whorls, the elevations are rather ribs or bars.

**Example.** Pho. semitonsa.

**Phosgene Gas.** [Chlorocarbonic Acid Gas.]

**Phosphoric Acid.** [Phosphorus.]

**Phosphoric Acid, Medical Properties of.** Dry phosphoric acid is sometimes used in the form of pills, but this is not an eligible mode; the common form is in the form of solutions of which the dilution is very macopoeia. This differs from the other dilute mineral acids in not affecting so strongly the digestive organs, on which account it may be persevered in for a longer time. It is particularly suited to the immediately states of the stomach, and also to states of debility, characterised by softening of the bones and a phosphatic condition of the urine. In this latter state it is often more efficacious when combined with iron, in the form of a phosphorus of that metal. The same combination is of great utility in most cases of diabetes. In passive hemorrhages, phosphoric acid, properly diluted, quickly arrests the bleeding, as it coagulates the blood. This property increases in a greater degree by the undiluted acid, and hence if injen for internal cancer death. A poisonous dose of the strong seid may be counteracted by chalk or carbonate of soda.

**Phosphorus.** This elementary, solid, non-metallic body was discovered in 1669, by Brand, an alchemist of Hamburg; he kept the mode of preparation for a long time secret, but as he could not conceal the fact of its being obtained from urine, Kunkel tried to procure it from the urine of the same source, and succeeded in a small degree.

It will not be requisite to describe the original mode of preparing this very peculiar substance, and we shall give an outline merely of the method at present employed. It has been shown that a certain [Bone] contains a large quantity of phosphoric acid combined with lime, forming a sulphate of phosphorus of that earth; and it was first proposed by Scheele to obtain phosphorus from bone; for this purpose the bones are ignited or calcined in contact with the air until they become white; and when this happens it is a proof that the charcoal derived from the decomposition of the animal matter is entirely expelled. In this state they consist of phosphate of lime mixed with little else than a small portion of carbonate of lime. After being reduced to a fine powder, they are digested for a day or two with sufficient water to form a thin paste, and half their weight of sulphuric acid. In this case sulphate of lime is formed, and the greater part of this once again converts a sulphate of lime remains in solution; this is to be evaporated in a copper vessel, and the precipitate formed being separated, the clear fluid, which is chiefly phosphoric acid, is to be evaporated nearly to dryness, and mixed with about a fourth of its weight of powdered charcoal, which is evaporated to be strongly heated in an earthen retort, the beak of which is immersed in water; by the action of the heat the phosphoric acid yields oxygen to the carbon, and the results are phosphoric acid or phosphorus oxide, which is volatile, and the vapour of phosphorus, which is condensed by passing into water.

The properties of phosphorus are, that it is solid, transparent, and nearly white, but being a phosphoric acid or reddish tint; it is so soft that it may be indented by the nail, and it is very readily cut. When heated to about 106° it fuses, and at 550° it is converted into vapour; it has a peculiar smell when exposed to the air, but this is probably
derived from the action of the oxygen of the air upon it. Neither water nor alcohol dissolves phosphorus, but it is dissolved by ether and by oils. It emits light when exposed to the air in the dark, and hence its name (from φως, light, and πέριπου, to carry). It is commonly ignited by a phosphorous match.

Phosphorus appears to be composed of
One and a half equivalents of oxygen 12
One equivalent of phosphorus 16

Phosphoric Acid is procured by adding carbonate of ammonia to the acid to saturation. It crystallizes in delicate needles; when heated, it is decomposed, giving off ammonia, and by the continued application of heat, the phosphoric acid remaining is converted into phosphoric acid. It is not a salt of any importance.

Phosphoric Acid. This acid exists largely in nature, not only as it has been already mentioned, in combination with lime, forming bone, but also in some vegetable products, and in certain cases in combination with the oxides of iron, copper, lead, manganese, and uranium; but the quantity of these compounds is so small, the percentage, and are regarded as objects of curiosity.

Phosphoric Acid may be artificially formed by the direct combination of phosphorus and oxygen. When a piece is inflamed, and it is immediately covered by a large bell glass, the phosphorus is converted into white flakes of phosphoric acid, which fall like snow in the vessel. When exposed for a short time, to the air, the acid darkens, and is no longer fit for use: when a longer time, it is converted into phosphoric acid, which is found in great abundance in the atmosphere, and when pure, is a very good fuel. When purified, it is no longer fit for use: when a longer time, it is converted into phosphoric acid, which is found in great abundance in the atmosphere, and when pure, is a very good fuel.

Phosphoric Acid is also formed when phosphorus is heated in moderately strong nitric acid; the nitric acid is decomposed, and yields oxygen to form the phosphoric acid. By evaporation in a platinum capsule, a phosphoric acid is obtained.

Phosphoric acid is composed of
Two and a half equivalents of oxygen 20
One equivalent of phosphorus 16

Phosphoric acid is colourless, insipid, odourless, and very pale; when heated, it darkens, and is no longer fit for use: when a longer time, it is converted into phosphoric acid, which is found in great abundance in the atmosphere, and when pure, is a very good fuel. When purified, it is no longer fit for use: when a longer time, it is converted into phosphoric acid, which is found in great abundance in the atmosphere, and when pure, is a very good fuel.

Phosphoric Acid, like the preceding, is entirely an artificial product; it is obtained in the greatest purity by subliming phosphorus through bichloride of mercury in a glass tube. During the action of the heat, it is decomposed into phosphorus, sulphur, and phosphoric acid. Water dissolves this acid in all proportions; it acts very powerfully as a deoxidizing agent, taking oxygen from many compounds containing it: it never dissolves with many solid substances, forming acids, and the corresponding phosphoric acid.

Hydrogen phosphate is composed of
One equivalent of oxygen 8
Two equivalents of phosphorus 32

Phosphorus Acid, like the preceding, is entirely an artificial product; it is obtained in the greatest purity by subliming phosphorus through bichloride of mercury in a glass tube. During the action of the heat, it is decomposed into phosphorus, sulphur, and phosphoric acid. Water dissolves this acid in all proportions; it acts very powerfully as a deoxidizing agent, taking oxygen from many compounds containing it: it never dissolves with many solid substances, forming acids, and the corresponding phosphoric acid.

This acid dissolves very readily in water; it has a sour taste, reddens vegetable blue colours, and combines with some bases to form salts, which are called phosphates.

Phosphoric acid is also formed when phosphorus is burnt in rarefied air. When phosphorus is exposed to air and moisture, it has been long known that a dense sour fluid is formed by the absorption of oxygen: this was supposed by M. Dulong to be a peculiar acid, and he called it phosphoric acid; it was subsequently shown by Davy to be a mixture of phosphorus and water.

Phosphoric acid is always formed by the action of phosphorus and water, and it is divided into a number of different fractions, and the whole may be expressed thus:

\[
\begin{align*}
\text{Phosphorus} & \rightarrow \text{Phosphoric acid} \\
\text{Phosphoric acid} & \rightarrow \text{Phosphoric acid} + \text{Water} \\
\end{align*}
\]

Phosphoric Acid is an important acid in the formation of phosphates, which are found in all parts of the vegetable and animal kingdom, and are present in great abundance in the earth's crust. It is used in the manufacture of various phosphates, and is an important constituent of many fertilizers.

Phosphoric Acid is also formed when phosphorus is heated in moderately strong nitric acid; the nitric acid is decomposed, and yields oxygen to form the phosphoric acid. By evaporation in a platinum capsule, a phosphoric acid is obtained.

Phosphoric acid is composed of
Two and a half equivalents of oxygen 20
One equivalent of phosphorus 16

Phosphoric acid is colourless, insipid, odourless, and very pale; when heated, it darkens, and is no longer fit for use: when a longer time, it is converted into phosphoric acid, which is found in great abundance in the atmosphere, and when pure, is a very good fuel. When purified, it is no longer fit for use: when a longer time, it is converted into phosphoric acid, which is found in great abundance in the atmosphere, and when pure, is a very good fuel.
Pyrophosphoric Acid.—Professor Clark of Aberdeen first discovered that when common phosphate of soda is heated to redness, it is completely changed in some of its properties, and after being dissolved in water, it affords crystals of a new salt, which he named pyrophosphate of soda. It gives a white precipitate with nitrate of silver, instead of a yellow one. If a solution of this salt be decomposed by one of acetate of lead, the precipitated phosphate of lead be treated with hydrosulphuric acid as already described, and the excess of it be suffered to escape by exposure to the air, without the application of heat, the remaining solution is hydrophosphoric acid, consisting of

One equivalent of water 9
One equivalent of phosphoric acid 36
Equivalent 45

When saturated with soda, the pyrophosphate is obtained without the further agency of heat. Unlike the sesquihydrate above described, this acid, if exposed for some time to a high temperature, undergoes a change, it being in fact converted into sesquiydrate.

Metaphosphoric Acid.—If biphosphate of soda be heated to redness, a salt is formed which, treated as the last, gives an acid liquor, containing the metaphosphoric acid or diborate; phosphoric acid.

Glacial phosphoric acid is also in general mostly metaphosphoric acid. This hydrate is characterised by producing a whitish precipitate of alumina, and it consists of the salts of earth and metallic oxides; precipitates which are remarkable semisolid bodies, or soft solids without crystallization.

Phosphuret and Phosphorus combine, and in different proportions. According to Magnus, phosphuret of potassium is obtained when these elements are fused together under water; and when this compound is thrown into water, a yellow powder precipitates, which is a solid phosphuret of hydrogen, containing less phosphoric acid. It is composed of

Two and a half equivalents of phosphoric acid 90
One equivalent of phosphorous acid 16
Equivalent 106

Azote and Phosphorus form phosphuret of azote. This compound cannot be obtained by direct action; it is the result of the action of ammonia on the chlorides of phosphorus. The changes which occur are effected with difficulty, but the phosphuret of azote eventually obtained has the following properties: it is a light white powder, and although formed of very volatile constituents, it remains fixed and infusible even at a great heat, when the access of air is prevented; but if that be present, white vapours of phosphoric acid are formed. This compound of azote is remarkable also for its indifference even to the most powerful reagents; it is insoluble in water and in acids, nitric acid even attacking it only after long continued exposure to it. Chlorine and sulphur do not act upon it; it is insoluble in alkaline solutions, but when heated with solid hydrate of potash, ammonia is evolved.

It is composed of

One equivalent of azote 14
One equivalent of phosphorous acid 16
Equivalent 30

Phosphuretted Hydrogen Gas.—This gas was obtained by Gengembre in 1783: it is procured by boiling phosphorous acid in a solution of potash. The gas which arises is spontaneously inflammable; and during its combustion there are formed water and phosphoric acid: it is colourless, and has a disagreeable odour resembling that of onions. Water dissolves about two per cent of this gas; but the solution, unlike that of sulphated hydrogen gas, has no acid properties. It suffers no change of composition, whether kept in the dark or exposed to light. The specific gravity of this gas, according to Dumas, is 1.761. It is stated that its spontaneously inflammatory property is lost by being kept over water: this power, according to Prof. Graham, must depend upon something extraneous: this is shown by the circumstance that the gas which is obtained by heating hydrated phosphoric acid, and which Davy called hydrophosphoric gas, is not spontaneously inflammable. This compound of hydrogen and phosphorus, as shown by Prof. Graham that the gas is deprived of its power by porous absorbents, such as charcoal, by phosphoric acid, and by a most minute quantity of several combustible bodies, such as potassium, the vapour of ether, and essential oils; and he also discovered that the property was communicated to the gas obtained by either process, by the addition of a very minute quantity of nitric oxide gas, or of nitrous acid, varying from 1-1000th to 1-10000th of the volume of the gas.

Phosphuretted hydrogen gas decomposes some metallic solutions, such as those of copper and mercury, and metallic phosphates are precipitated; and when it is pure, it is entirely absorbed by sulphate of copper and chloride of lime.

It is probably composed of

One and a half equivalents of hydrogen 15
One equivalent of phosphorus 16
Equivalent 17.5

Chlorine and Phosphorus combine in two proportions, forming the protochloride and phor perchloride.

Production of Phosphoric Acid of Chloride of Phosphorus.—When a mixture of bichloride of mercury and phosphorus is heated, we have already had occasion to notice that protochloride of phosphorus is produced. When first procured it generally a red-coloured fume, and the presence of a little uncombined phosphorus. When this has had time to deposit, or when it is purified by slow distillation, it becomes limpid and colourless. It has a suffocating odour, and exaltes and fumes when exposed to the air. Its specific gravity is 1.45. It does not alter the colour of dry litmus paper, but if moist, then hydrochloric and phosphorous acids are formed, which reddens it strongly. The vapour of this compound is combustible, and acts with great energy upon water, producing the changes which have been described.

It is composed of

One and a half equivalents of chlorine 54
One equivalent of phosphorus 16
Equivalent 70

Perchloride of Phosphorus is obtained by the spontaneous combustion of phosphorus in chlorine gas; a white, flaky, volatile compound is formed, which is the perchloride. It is volatile, rising in vapour at 200°. It is fusible under pressure, and crystallizes in prisms. It reduces dry litmus paper, owing, as has been suspected, to its acquiring phosphoric acid and hydrogen from the decomposition of the paper. Like the protochloride, it acts strongly upon and decomposes water, but the results are phosphoric instead of phosphorous acid, and hydrochloric acid.

It is composed of

Two and a half equivalents of chlorine 96
One equivalent of phosphorus 24
Equivalent 120

Salpeter and Phosphorus may be made to combine by fusion in an exhausted flask or under water, but the operation requires great caution. Mr. Faraday melted seven parts of phosphorus with five parts of sulphur; a reddish yellow fume of phosphorus formed; one is solid, crystalline, and collects in the upper part of the flask, and the other is fluid, and remains at the bottom.

The liquid compound is probably a protobromide, composed of single equivalents of its elements; this remains liquid at 29° Fahr. When heated it is rendered very inflammable, and on exposure to the air it emits penetrating fumes. It reddens litmus slightly, an effect which is probably derived from the moisture which it contains. When only a small quantity of water is added for the purpose of producing a vapour excited by their action, and hydrobromic acid is evolved; in a large quantity of water, the gas is dissolved. The perbromide, while it remains solid, is yellow; but by heat it first melts and then fumes, and is thrown into a red-coloured fume, and a vapour of the same colour; by fusing it yields rhombo crystals, but by distillation they are acicular. When exposed to the air, it emits dense penetrating fumes; and on
the addition of water to it, it is converted into hydrobromic and phosphoric acids.

**Iodine and Phosphorus.**—When these substances, perfectly dry, are heated together in an exhausted vessel, they act violently, giving out heat, unaccompanied by light. When the proportions are one of phosphorus and about twelve of iodine, the compound is reddish-brown, very fusible, and is probably a sesqui-iodide of phosphorus. It is decomposed by water, and resolved into hydriodic and phosphoric acids.

When the proportions are one of phosphorus and about forty of iodine, a black and less fusible compound is formed, which is resolved by water into hydriodic and phosphoric acids; it is probably composed of two and a half equivalents of phosphoric acid, and one equivalent of iodine. The selenium, in Prout's way; the volatile, very rare; the fusible, very abundant.

**Selenium and Phosphorus** may be made to combine by dropping the selenium into the melted phosphorus. It is an unimportant compound, and is probably a di-seleniuret.

Phosphorus may be made to combine with the greater number of the metals; the most important of these compounds will be found under each particular metal.

**Phosphorus, Medical Properties of.** This elementary substance exists as an essential constituent of both vegetable and animal bodies; yet when applied in a concentrated and pure state to any organised structure, it acts upon it as a violent and corrosive poison. Into animal bodies it may be introduced in a diluted state, which is determined of its virulence, as an ingredient of many common articles of food. One of the chief sources of it is the starch of the cereal grains, such as wheat-flour, in the sales of which, when burnt, it amounts to 23 per cent. (f). In the Persian Treatise, he also alludes to plants, such as onions, in which it exists as a phosphate of iron; polygonal and other plants, in which it occurs as a phosphate of lime. It also exists not only in the bones and other parts of the body, but in many of the fluids, especially the excretions. Thus it is found in the milks and roes of fishes, the substance of oysters, the yolks of eggs, in the liver, and also the brain, in which organ of the human being it is said to compose one-eighth to one-twelfth.

Phosphorus is of all stimulants the most powerful and diffusible, but, on account of its activity, highly dangerous. Its poisonous action seems to be connected with its strong affinity for oxygen, by which it is converted into phosphorous and phosphoric acids. Hence when burnt in contact with the animal tissues, it abstracts oxygen from them, and produces an eschar, resembling a burn; the phosphorus in this way loses weight and is absorbed, so that the exhalation from the animal organs is cutaneous perspiration is impregnated with the vapour, and, under certain circumstances, luminous. A very small quantity of solid phosphorus, even one grain and a half, has proved fatal. Solutions of phosphoric acid in it, fluid, volatile, or in aerts, are still more active and dangerous.

Little use is made of phosphorus or its oleaginous solutions in medical practice in Great Britain, though in cases of extreme prostration of the nervous system it is not without its value.

In the event of a poisonous dose being taken, bland mucilaginous fluids should be freely administered, followed by magnesium or chalk.

**Photius** was born in the early part of the ninth century, of a patrician family of Constantinople. He studied in that city, and attained great proficiency in all kinds of learning, which was enhanced by an irreproachable morality. He was created Metropolitan of the Church of Constantinople, and held various important offices. The emperor sent him on a mission to Assyria (probably Persia is meant), and on his return he was dismissed from the metropolitan see and transferred to the patriarchate of Photius. Bardas, the uncle and colleague of Michael, was a partial to Photius; and having, on account of some dispute as to jurisdiction, removed and banished the patriarch, Photius was determined to take his place. Photius, being a layman, took all the various clerical orders one after the other in six consecutive days; and after being ordained priest, he was installed in the patriarchal chair. Photius, its informer, his appointment was too glaring, especially as Ignatius, although a layman, was condemned and imprisoned in order to force him to abdicate, refused to do so. A subterranean council was assembled at Constantinople, A.D. 858, which deposed Ignatius and confirmed the appointment of Photius. Photius sent two bishops to Rome with letters for Pope Nicholas I, in which he gave a specious account of his election, and invited the pope to send legates to Constantinople, in order to co-operate with him in putting down the remains of the Iconoclastic heresy. The legates came; and a new council being assembled, A.D. 859, which Photius attended, condemned the Iconoclasts, and was again deposed on the score of incapacity and other charges, and obliged to sign his own abdication, with the concurrence of the papal legates, who were either deceived, bribed, or frightened into compliance by the party of Photius.

The see of Rome had for more than a century past been disputing with that of Constantinople on a question of Jurisdiction. During the period of the predominance of Photius, the patriarchs of that city, supported by the emperors, had appropriated to themselves the spiritual jurisdiction over the extensive provinces of Illyricum, Macedonia, Achaea, and Sicily, which had formerly been subject to the Roman see. A fresh subject of contention afterwards served to embitter the quarrel. The heathen inhabitants of Bulgaria being converted to Christianity by both Latin and Greek missionaries, Photius placed the new churches of Bulgaria under his own jurisdiction, a measure which seemed justified by the proximity of Bulgaria to Constantinople. But the pope alleged that his own missionaries had been first in the field, and that the king or chief of Bulgaria, a Christian country, which was acknowledging of spiritual obedience. In short Nicholas demanded the restitution of the provinces of Illyricum, Macedonia, Achaea, Sicily, and Bulgaria, which Photius stoutly refusing, the pope assembled a council at Rome, A.D. 866, and deprived him of his see. Photius was condemned for Photius to be illegal, and excommunicated him with all his abbots. Photius however remained quiet in his see; and in the year 866, having assembled a council at Constantinople, he produced five charges, some relating to Photius, and others to discipline, against the Roman or Western Church. The charges were proved; and Photius, at the head of his council, excommunicated the pope, and declared him a heretic. Photius was then excommunicated by the council of orthodox Christians: the charges were:—1. That the Romans fasted on the Sabbath, or seventh day; 2. That they allowed the use of milk and cheese during the first week in Lent; 3. That they forced celibacy on the clergy, the consequence of which, observed Photius, was, that their country swarmed with bastards; 4. That their bishops alone anointed persons with the holy chrism, withholding that power from presbyters; 5. That they had interpolated the patriarchs, and introduced a syncretic persuasion. Photius was excommunicated by the word 'filioque,' thus asserting the Holy Ghost to proceed from the Son as well as from the Father, 'a tenet unknown till the fifth or sixth century, and even then only partially admitted by some of the Western church.' (Photius, Epistles.)

In the year 867, after the murder of the emperor Michael, Basilissus the Macedonian ascended the throne. It is said by some that Photius refused him the sacred crown, and approached him with the murder of his benefactor. However this may be, Basilissus soon after deposed Photius, exiled him to Cyprus, and restored Ignatius to his see; and this act was confirmed by a general council assembled at Constantinople, A.D. 869, which was attended by legates of Pope Adrian II., and in which Photius was condemned. This is called the eighth Ecumenical council, having been acknowledged by both the Eastern and Western churches.

Photius in his exile found means to deprave the hostility of the emperor, and after some years he was allowed to return to Constantinople. He is said to have composed a genealogy of the Macedonian family, and also of the successors of Photius, and after the death of Michael, invades the August of Trides, king of Armenia. At the end of the year 877, the patriarch Ignatius died; and the canonical impediment to the exaltation of Photius no longer existing, he was re-elected to the patriarchal see; and Pope John VIII. was induced to acknowledge his nomination, thus restoring peace to the church. In 879 Photius assembled a new council at Constantinople, in which the word 'filioque' was erased from the creed. The separation however between the two churches dates only from the next century; for two centuries later, when the patriarch Michael Cerulario, after a long and angry correspondence with Leo IX., was excommunicated, with all his adherents, by the pope's legates, who solemnly deposited the written act of excommunication on
the grand-altar of Sancta Sophia, and having shaken off the dust from their feet, departed from Constantinople, A.D. 1654.

In the year 866, Leo, the son and successor of Basilius, exiled Chosroes, for reasons given above, was secretly introduced, into Armenia, where the patriarch died some years after; but the epoch of his death is not exactly known. Photius was of an ambitious and turbulent disposition, and this was his case, and the result of his life and death. The Greek and Protestant writers being mostly in his favour, and the Roman Catholics against him. All however agree in admitting his very extensive learning, which was truly wonderful for his age, as well as his exquisite critical judgment.

The following are his principal works:—1. 'Myriobiblon, sive Bibliotheca librorum quo legis et calamum Photius,' with a Latin translation, fol., 1553. Imm. Bekker published the work, an edition from a Venetian and three Paris MSS, with an index, Berlin, 1824, 2 vols. 4to. The Bibliotheca is a kind of review of the works which he had read, many of which have since been lost. Photius gives a brief epitome of each, adding his own critical judgment of the merits of the writer, and of his statements and opinions. In this manner Photius reviews more than fifty historians, a still greater number of divines, besides orators, philosophers, grammarians, rhetoricians, &c., in all 272 works with the corresponding decrees of the Emperors concerning Eccelesia

cies, Matters,' Basle, 1652. 5. A treatise, 'Abadus Latins de Procesione Spiritus Sacri,'and other theological and controversial works, several of which are still unpub

dished. The latter was written in the year 863. Montfaucon gives some fragments in his 'Bibliotheca Coeliana.' 6. 'Amphlochia, being Answers to Questions relative to various Passages in the Scriptures, with an Ex

position of the Epistles of St. Paul.'

PHOTGENIC DRAWINGS, facsimile representations of objects produced according to the recent discovery of M. Daguerre, mechanically by the chemical action of light on a prepared metallic tablet, upon which the images of the objects, either viewed with the naked eye, or through a microscope or telescope, or under other forms of magnification, are named after its inventor the Daguerrotype, and the process itself either photogeny, photography, or heliography (sun-drawing).

The invention was first formally communicated to the Royal Society of Scotland. In 1831 Daguerre, before the Academy of Sciences, January 7th, 1839. From that moment Daguerre (who was afterwards rewarded by a pension by the government) and his invention engaged general attention. The discovery was spoken of as little short of miraculous; and as having realised what had long been considered a hopeless desideratum, namely, the giving permanency to the beautiful pictures produced by the camera-obscura, with the exception indeed of colour and motion, on both of which, the latter quite as much as the first, the peculiar charm of the camera-obscura depends; whereas the slightest degree of motion, even that of clouds and trees, is positively injurious to the action of the Daguerrotype. It becomes fixed, and the parts of the picture which are affected by the motion. Hence not only powerful sunshine, but perfect stillness in the atmosphere is required for its successful operation, and its practical usefulness becomes limited to the delineation of buildings, sculptures, and other inanimate objects, more especially such as are independent of sunshine, and which may at any time be copied by means of a sufficiently strong artificial light thrown upon them.

Still more great improvements since made in it, the powers of the Daguerrotype are so far circum-
scribed, the invention is highly valuable, because it not only ensures perfect fidelity of likeness where it is most essen-
tial, and where it is hardly attainable by the most practised and skilful painter; its cheapness and facility of execution being the chief defects, and which are now remedied — details— those which are imperceptible to the naked eye, and of course cannot possibly be represented upon paper.

P. C. No. 1117.

Yet become visible in a photogenic when it is exa-

mined with a magnifying-glass. If therefore the Daguerro-
type should be found susceptible of no further improve-
ments, it will still be an invention of the greatest utility to a great extent of art, and of much value to the science of art. The most beautiful and valuable works, of the finest buildings and statues, of the most elaborate carvings and designs, furniture, &c., may be obtained with great expedition. Nevertheless, the time may have come when art has worn off, the interest taken by the public in the discovery has greatly diminished. This is easily accounted for, since besides that the class of objects for which it peculiarly recommends itself are not appreciated by the many, there certainly are defects and inconveniences in the photogeny; the one principal of these is, that they must be upon metallic tablets with a highly polished surface; consequently their appearance is not that of a print or drawing, but of an engraved steel plate, devoid of any general effect as to light and shade, and producing a glare offensive to the eye, in order to avoid which it is necessary to hold the tablet in a particular direction. The metallic tablets render them expensive, and their material and fitting-up (as each plate is fixed upon a panel, and protected by a glass over it) makes it difficult to keep any number of them, except in cabinets with shallow drawers for the purpose. Neither can they be hung up in frames, since in addition to their appearing only like so many polished discs of metal, they may be taken down whenever it was required to look at them.

More recently M. Bayard has found out a method of taking similar delineations by means of the camera-obscura upon the plate, which, though not so much cheaper, and capable of being kept like prints, are said to be far more pleasing to the eye, and in fact to have nearly the effect of sepia drawings. But on the other hand they fall infinitely short of metallic photogenic drawings; for not only is the outline of objects less distinct, but no more can be shown than what appears to the naked eye, no further details being rendered visible by the use of a convex lens. This invention is however at present quite in its infancy, and is yet but imperfectly understood, and is not at all likely that it will ever be able to accomplish what is the most wonderful and valuable characteristic of the Daguerrotype drawings, namely the delineation of objects as they really exist, with all those minutiae which are invisible to the naked eye.

Photogenic drawings are produced upon plates of copper coated over with silver, which are found to answer better than such as are entirely of the last-mentioned metal. After having been washed with infections, or in various forms of spirit, the plate is named after its inventor the Daguerrotype before the Academy of Sciences, January 7th, 1839. From that moment Daguerre (who was afterwards rewarded by a pension by the government) and his invention engaged general attention. The discovery was spoken of as little short of miraculous; and as having realised what had long been considered a hopeless desideratum, namely, the giving permanency to the beautiful pictures produced by the camera-obscura, with the exception indeed of colour and motion, on both of which, the latter quite as much as the first, the peculiar charm of the camera-obscura depends; whereas the slightest degree of motion, even that of clouds and trees, is positively injurious to the action of the Daguerrotype. It becomes fixed, and the parts of the picture which are affected by the motion. Hence not only powerful sunshine, but perfect stillness in the atmosphere is required for its successful operation, and its practical usefulness becomes limited to the delineation of buildings, sculptures, and other inanimate objects, more especially such as are independent of sunshine, and which may at any time be copied by means of a sufficiently strong artificial light thrown upon them.

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taming whether the absorption of light alone will produce effects analogous to what is observed to follow the absorption of caloric. For this purpose it would be only necessary to prepare a differential thermometer whose bulbs were of the substances possessing the properties of light and caloric, with the accompanying the incident light would, by acting equally upon the two bulbs, produce no change in the indications of the instrument, and the only alteration, if any, which could ensue, would arise from the unequal absorption of light by the two bulbs. This alteration however, when observed, though it might be considered a correct measure of the quantity absorbed, could not be taken for a measure of the quantity or brightness of the incident light, as further by the same laws the quantity absorbed by the same substance is proportional to the quantity of incident light, whatever may be its nature, that is, whether it be solar light, gas light, &c.

The photometer invented by Leslie differs from the instrument we have supposed merely in its being in some respects less deserving of the name. It consists of a differential thermometer having one of its bulbs of plain transparent glass, the other of the same material coated either with Indian-ink or black enamel, and is described by its author in the article "Meteorology" in the Encyclopaedia Britannica, wherein he observes, - The rays which fall on the clear ball pass through it without suffering obstruction; but those which strike the dark bulb are stopped and absorbed at its surface, where, assuming a latent form, they act as heat. This heat will continue to accumulate till its further increase comes to be counter-balanced by an opposite dispersion, causing the rise in temperature of the black ball to be exactly equal to that of the blackened glass at the point of equilibrium therefore the constant ascensions of heat derived from the action of the incident light are exactly equated by the corresponding portions of it again abstracted in the subsequent process of cooling. But in still air the rate of cooling is, within moderate limits, proportional to the excess of the temperature of the heated surface above that of the surrounding medium. Hence the space through which the light and dark bulb in a state will mean the momentary impressions of light, or its actual intensity. Allowing that the light incident upon the clear ball is wholly transmitted, and that that which strikes the dark bulb is wholly absorbed, assumes a latent form, and then acts as heat, by no means follows that the effect produced upon the instrument was wholly or even chiefly attributable to the absorption of light, since we learn from Leslie's own experiments (ibid., p. 67) that the caloric rays which accompany the light which was abundantly absorbed by the dark bulb. This has since been so satisfactorily established by the observations of Thomson and others, that, as a measure of light, the instrument may be regarded as useless.

The design of Leslie's photometer was to a considerable extent obviated by Mr. Ritchie, the late professor of natural philosophy in the London University College, and then rector of the academy of Tain, who, in 1825, communicated to the Royal Society the description of a new photometer. In order to intercept the caloric rays accompanying the light experimented upon, he transmitted the latter through a thick circular disk of glass into a metallic air-light cylinder, the diameter of which was considerable compared with its depth. The axis of the cylinder was placed horizontally, and the aperture covered by the glass was the only one through which the light was admitted. Across the interior of the cylinder was stretched a circular sheet of dark paper, which absorbed the incident light, and, as was supposed, by converting it into heat, which became sensible by its expanding the air within the cylinder. A second cylinder of the same form and construction was placed by the side of the first so that the line of axes might coincide, but with the aperture for the admission of light turned in the contrary direction, and in that position they were connected by a bent thermometer tube containing a coloured fluid, which served to prevent any sideward influence of the light, and, to reduce the light to the same degree of intensity, the level of the fluid in the two branches of the tube was of course the same; and a variation of level indicated a variation in the intensity of the two bulbs of air, attended by the greater or lesser movement of the fluid in one aperture through the other. To compare the relative intensities of two lights, the instru-

ment was placed anywhere between them, and approached towards one or the other, until it was found that the position of the fluid in the tube was the same as when the instrument was not under the influence of the lights. Supposing the whole of the caloric rays and none of the luminous rays to have been intercepted by the glass, this position determined the point at which the intensity of the two lights was the same; and hence, since the intensity of the luminous rays remains the same, whatever be the absorbing source (Light., p. 472), it followed that at equal distances from their respective sources their intensities were directly proportional to the squares of their observed distances from the instrument.  

More recently the same gentleman constructed a very simple instrument which affords an almost unerring measure of the relative brightness of two lights, provided they are of the same colour. The principle originated with Bouguer, who published it in his Traité d'Optique, in 1769. The annexed figure represents a vertical section of the instru-

ment. It consists of a rectangular box open at both ends and blackened upon its inner surface. On the top is a long narrow strip, the light AB, made either of wax, or oiled paper. Within are two sheets of plane looking-glass, CD and CE, cut from the same slip to ensure uniformity of reflection. Each sheet has the same width as the box, and its length equal to the hypothenuse of a right-angled isosceles triangle, whose side is the height of the box. Their reflecting surfaces are turned towards the open ends of the box, and their upper extremities rest against each other along a line, which is projected into the point C, and which divides the aperture AB into two equal parts, separated by a narrow strip of black card to prevent the mingling of the lights reflected from the two planes. In using the instrument, it is placed between the lights whose intensities are to be compared, so that a ray may be intercepted from CD and CE upon the tissue AB. It is then approached nearer to one or the other until to an eye situated above AB, the two portions AC and BC appear equally illuminated, which on account of the immediate proximity of AC and BC, may be determined with tolerable correctness; the colour of the two lights being supposed the same. The distances of the lights from the vertical CP being measured and squared, give the direct ratio of the intensities as before.

It remains to notice a mode of comparing the illuminating powers of two lights suggested by Count Rumford, which is remarkable for the facility with which it may be applied, and the simplicity of the requisite apparatus. Nothing is being needed than a smooth surface of small extent and of a light uniform colour, and a blackened stick for throwing a shadow. The surface is illuminated by the two lights experimented upon, which are to be so placed, that when the stick is interposed between them and the surface, the two shadows may be nearly in contact, which will enable the eye to decide whether they are of equal depth, and will at the same time ensure the intercepting of rays equally inclined to the stick, provided the interval by which the object is brought nearer to the plane surface is so small, that one of the lights must be brought nearer to or retired farther from the surface till an equality of depth is obtained, and then the squares of the perpendicular distances of the lights from the surface give the ratio of their intensities. If an equality between the inclinations of the intercepted rays to the surface cannot be obtained, then, when the two shadows are of the same depth, the intensities of the lights will be directly proportional to the squares of the respective perpendicular distances of the lights from the surface, and inversely proportional to the sines of the inclinations of the intercepted rays to the surface.

The last two methods are theoretically perfect, when applied to lights of the same colour; those which proceed though independent of the colour of the light, rest upon hypotheses which, if not untrue, are unestablished.
PHRAGMO/CERAS, Broderip's name for a genus of camerated shells found hitherto only in a fossil state.

Generic Character.—Animal unknown.

Shell incrusted and compressed, more or less conical; sessile among their edges, crossed externally by the lines of growth; siphonættes incurved, stems differing in structure externally are contrated at the middle, its exteriorly protruded into a subcilindrical beak.

This genus is distinguished from Orthoceras by being camerated, having no siphonættes, and all whorls secreted from the old. It is of the same species that except O. piriforme, by the form of the aperture, which further distinguishes it from Cyrtoceras of Goldfuss, the aperture of which is round.

Three species: P. acutum, P. ventricosum (Orthoceratites ventricosum Steinitz), and P. compressum, from the lower Ludlow rock, are figured in Murchison's great work on the Silurian System; where another species, P. naufragus, from the same locality, is also figured.

PHRANZA. [Byzantine Historians.]

PHRARTOS. [Mediae.]

PHRASE, in Music, a succession of sounds either in melody or harmony, expressing an unbroken sense more or less complete, and terminating in a pause (repose), i.e. a comparatively long note or a rest: thus forming a cadence more or less perfect.

Such is Rousseau's definition of a term concerning which no two writers are agreed, and, in our opinion, a better cannot be given without entering much more at large into the subject than the nature of this work will allow. Those who desire further information on a matter chiefly interested in the students, may find much in 'An Essay on Music,' by the Rev. W. Jones, F.R.S.; in Riepel's Anfangsgründe, &c. (Elements of Musical Composition); in Kollmann On Harmony—who uses the word Period instead of Phrase; and, above all, in Reignel's Traité de Méloïdes, 2nd edit, Paris, 1832.

PHRENOLOGY (from φρέν, mind, and κόες, discourse) is, in the words of Dr. Spurzheim, the doctrine of the special faculties of the mind, and of the relations between their manifestations and the body, particularly the brain. Without entering upon the question of the nature of the mind, or of the number or nature of its original faculties, it may be admitted as the result of all observation, and a fact on which nearly every philosopher has agreed, that the brain is the part of the body by means of which all the powers or faculties of the mind are manifested. The fundamental principles of phrenology, and those in which it chiefly differs from other psychological systems, are that the manifestation of each of the several faculties of the mind depends on a particular part of the brain, and that, ceteris paribus, the degree or strength in which each faculty is manifested in each individual, depends on the size of its appropriated portion of that organ; and, further, that the several functions in which the stomach, liver, and other organs perform each their separate share in the common result of digestion of the food; 2, by the different degrees in which, in different individuals, the several mental functions are manifested. Even in the earliest period of childhood, and before education can be imagined to have exercised any influence on the mind, children exhibit the most varied dispositions—each presents some predominant propensity, or evinces a singular aptness in some study or amusement, and it is a marvellous observation that every one has his peculiar talent or propensity. But it is difficult to imagine how this could be the case, if the manifestation of each faculty depended on the whole of the brain; and it is more so in the whole mind might affect the mind generally, depressing or exciting all its functions in an equal degree, but could not permit one faculty to be strongly and another weakly manifested. 3. The plurality of organs in the brain is supported by the phenomena of some forms, in which we find, in the same organ, the germs for all the mental faculties in an insane person to be equally disordered; it often happens that the strength of some is increased, while that of others is diminished; and in many cases one function only of the mind is developed, while all the rest are performed in a natural manner. 4. The same opinion is supported by the fact that the several mental faculties are developed to their greatest strength at different periods of life, some being exercised with great energy in childhood, others only in adult age; and that, as this energy decreases in old age, there is not a gradual and equal diminution of power in all of them at once, but, on the contrary, a diminution in one or more, while others retain their full vigour. The third opinion is, that the organs of the brain are of two kinds; one kind of organs is the seat of general mental processes, and is the organ of which the different germs appear to be distributed during fetal life; in the third period, a different kind of organs appears to be indicated by the phenomena of dreams, in which only a part of the mental faculties are at rest or asleep, while the others are awake, and, it is presumed, in the third period the first species of faculties is a different one from that of the second species, and is thus not connected with the first. 6. It is stated that the examination of the brains of individuals, each remarkable for some peculiar propensity or talent, has demonstrated a constant correspondence in the development of a certain portion of the brain; and that thus the results of the observations upon phrenology was first founded by Dr. Gall, exactly coincide with and confirm the arguments by which its truths may, a priori, be made to seem probable. Lastly, pain has sometimes been felt in an organ with which it is presumed to be connected has been greatly excited; and when a faculty has been morbidly manifested during life, disease has sometimes been found to have affected the corresponding part of the brain.

The preceding arguments for the existence, in the general mass of the brain, of several organs or instruments for the manifestation of the different powers of the mind, form also the basis of the rules by which those powers which may be called the development of the brain, are determined. The power of the mind is regarded by phrenologists as a primitive faculty, and is considered to be manifested through the medium of a separate organ, which, 1, exists in two kinds of animal and not in human being; 2, is the same as that of the same species; 3, which is not proportionate to the other faculties of the same individual; 4, which does not manifest itself simultaneously with the other faculties, that is, which appears or disappears earlier or later than they; 5, which may act or repose singly; 6, which individually is propagated in a distinct manner from parents to children; and, 7, which singly may preserve its proper state of health or be affected by disease.

In accordance with these rules Gall enumerated nearly thirty primitive mental faculties, which are admitted, with more or less of modification, by all the phrenologists of the present day; and their number has been augmented by Spurzheim to thirty-three. The faculties Spurzheim divided into moral, or affective, and intellectual. The affective faculties or feelings he again divided into propensities, including all those which produce only desires or inclinations, and sentiments, including such as not only desire to act, but are combined with some other emotion or affection which is not mere propensity. The intellectual faculties also were divided into the perceptive and the reflective. The subjoined figures and the references to them will at once indicate this division of the mental functions on the exterior of the head which are supposed to correspond with the portions of the brain belonging to each, according to the system of Dr. Spurzheim. We have also transcribed the figures, as given by Mr. Combe, in the two first editions of his 'System of Phrenology,' in the later editions he has followed the enumeration of Dr. Spurzheim.
1. Amativeness is the mental faculty which produces the propensity to physical love, or, as it was termed by Dr. Gall, the instinct of propagation. Its organ is the cerebellum, and its energy is indicated by the extent of the space on each side of the head between the mastoid processes, immediately behind the ear and the spine of the occipital bone.

2. Philoprogenitiveness is the faculty which produces the feeling of love towards offspring. The evidence by which this is admitted as a fundamental faculty of the mind may afford an example of the application of the seven rules already given for determining them. There are many animals which take no care of their progeny, as reptiles, and, among birds, the cuckoo. In many species of animals the females alone take care of their offspring, as among cats, cattle, sheep, &c., and in general, even when both parents protect their young, the attachment of the mother is the stronger. The love of offspring bears no proportion to the other mental faculties, but is shared alike by men and brutes, and among the former is often felt as intensely by the most degraded as by the most exalted of the species. The love of offspring is sometimes, on the contrary, almost completely suppressed. Cases of insanity have not unfrequently occurred in which parental love was lost or greatly diminished; while others are recorded in which the love of offspring has been almost the only feeling which remained unin impaired. The seat of this organ is directly above the middle of that of amativeness; and the energy of the faculty is indicated by the general protuberance of the occipital bone. Though placed in the middle of the head, this organ is of course, like all the others, double, and extends to an equal distance on each side of the median line.

Amativeness. The existence of this, the propensity to inhabit particular regions or countries, which produces the love of home, and which determines in each species the dwelling and mode of life which is best adapted to it, is regarded as doubtful. Dr. Gall placed in this situation the organ of pride in man, and that of the instinct in animals which prompts them to seek and inhabit the heights of mountains or to fly high in the air, believing that faculties which are merely physical in brutes may become moral in man, and that there is an analogy between the feelings which prompt to the pursuit of moral and those which excite the desire of physical elevation. Mr. Combe and many of the Edinburgh school of phrenology name this the organ of concentriative attention, believing that it corresponds to the faculty of maintaining two or more powers in simultaneous and combined activity, so that they may be directed towards one object, a faculty disposing to sedentary pursuits, and a close and steady attention, especially by meditation, to a given object. At present it is agreed that the evidence is insufficient for the complete establishment of either of these opinions.

4. Adhesiveness is the propensity to attachment or friendship, by which individuals of the same or different kinds are induced to associate together, and which causes men to be attached to the various objects amongst which they are placed. Its objects are disinterested friendship, marriage, society, and attachment in general. The organ of this faculty is believed to be situated at No. 4., immediately above and to the outer side of that of philoprogenitiveness.

5. Combativeness is the natural disposition which men and animals feel in various degrees towards quarrel or fight. In order to discover its organ, Dr. Gall is said to have been in the habit of calling together boys from the streets to endeavour to make them fight. There were of course some who were fond of it, and others who were afraid of it; and in the former the part of the head marked 5 was prominent; in the latter it was flattened or depressed. The same difference is said to exist in the formation of this part, in correspondence with the strength of this disposition in the individuals.

* It may be necessary to mention that the chief modifications introduced into the system of phrenology by Spurzheim (whose ideas advanced a few years since being received by the great majority of phrenologists in this country) are expressed in the changes of its organs according to the sections to which he believed their predominance to correspond. Spurzheim accounting to the nature of faculties. Thus what was called the organ of meditation, but which in the original system was named the organ of destructiveness, observing that, though many in whom this organ was greatly developed had committed murder, Dr. Gall's organ of destruc-
several species of animals, and remarkably in the different \upshape{varieties} of dogs.
6. Destruktiveness, or the propensity to destroy, is the feeling which is gratified by any kind or mode of destruction. Spurzheim ascribed to it the tendency to all kinds of destruction, whatever they were objects, or the mode in which they were effected. Thus, the act of a man as if murder is but one of the directions which the disposition for destruction may take, and one from which in a conscientious and benevolent man it would always be diverted. In such a man this propensity is regarded as an evil, even as a useful end, as the procuring of food by the slaughter of animals, &c.; in another, in whom its influence is less counterbalanced, there will exist an indifference to the suffering and calamities of others, or even a positive pleasure in both. Thus, in a man such as Spurzheim's, when unrestrained, it may break out in acts of violence and love of blood-shedding in every form. In the diseased condition of its organ this propensity is regarded as the source of the irresistible desire for the destruction of life, of which so many lamentable examples are known, and which is commonly called homicidal monomania. The seat of the organ of destructiveness is on each side of the head immediately above the ear, at No. 6; and its various degrees of development may be seen in a comparison of the width at this point of the heads of carnivorous and herbivorous animals.

7. Secretiveness is the propensity to act in a clandestine manner; to conceal emotion, and to be secret in thoughts, wishes, and purposes. Its development is less frequent and more marked when the heads of men are cunning and hypocrisy, and the most usual direction which it takes for good ends is prudence. The organ of this propensity is immediately above that of destructiveness, at No. 7. (In the cases made in accordance with the enumeration of the faculties employed by Mr. Combe, in the early editions of his 'System of Phrenology,' this organ is marked 9.)

8. Acquisitiveness is the propensity to acquire. Its organ being found very large in notorious thieves, Dr. Gall conceived that there was a natural disposition to theft. Dr. Spurzheim, on the other hand, makes no limitation as to the purpose or mode of acquisition, which he believes to be determined in each case by the degrees in which the several other faculties of the brain are developed. Reduced to a more personal use, acquisitive propensity leads in some to the prudent accumulation of property by honest means; in others, to avocational and purposeless money-making by any method; in others, to theft or fraud.

9. Constructiveness is the faculty which leads to construction of all kinds: guided by its birds build their nests, rabbits burrow, beavers make their huts; and men are directed in the building of temples, churches, and other branches of the fine arts, building, and various manual operations. Its organ is situated at the lower part of the temple, at 9.

10. Self-esteem is the sentiment which gives an individual a high opinion of himself, which in excess produces pride and arrogance, and when moderate and modified by other superior faculties imparts dignity to the mind, and renders it hostile to everything that is mean or degrading. In a state of derangement the morbid excitement of this faculty leads the insane to imagine themselves exalted to thrones or to divinity. The seat of its organ is at the middle of the upper and back part of the head (10), directly above inactivity (6), with which Dr. Gall (as already mentioned) connected it.

11. Love of Approbation, according to Dr. Spurzheim, is the sentiment which makes us regard the opinion entertained of us, and induces the question—What will the world or others think of it? When the different faculties of a man are developed, it leads him to engage in improvements, to learn his trade, and to avoid every thing that can excite their surprise and wonder. Its organ is situated immediately in front of that of hope.

12. Ideality. Dr. Gall regarded the organ of this faculty as the organ of poetry, finding it much developed in all the great poets of antiquity and modern times. But it is also large in some, who though they may be fond of poetical conceptions, are not poets themselves. Dr. Spurzheim therefore believes that the essential nature of this sentiment is to impress a peculiar sentiment of grandeur or poetic ideal, and to vibrate the other faculties; to give a sense and love of beauty: to produce sublimity of conception, and excite warmth of imagination and expression. The organ of this sentiment is situated at the top of marvellousness, and the two frequently act together.

13. Benevolence is the disposition of the mind from which result compassion, kindness, philanthropy, mildness, charity, and various other amiable social virtues. Its exact seat in the brain is not defined; it may be considered to be proved by the rules above mentioned, and by which these phenomena are understood. It is generally observed, the existence of all the preceding and following faculties is determined; the seat of its organ in the upper and middle part of the forehead, just where the hair begins to grow.

14. Prudence is the faculty which determines and imparts constancy and perseverance to the other powers, and contributes to maintain their activity. In its various combinations with other faculties the results to which it leads differ considerably; with much self-command or power of the mind, it gives an obstinate persistence in the pursuit of honour and rank; with benevolence it excites the most active and persevering philanthropy; with destructiveness and acquisitiveness it may excite to daring acts of murder and rapine. When, on the other hand, this faculty is little developed, it leaves men inconsistent, and makes them the mere creatures of circumstances. Its organ is situated at the very top of the head, at 15.

15. Conscientiousness is the fundamental and innate sentiment which disposes mankind to look and to wish for justice. The existence of this feeling in a high degree is one of the chief constituents of a noble mind, and the strongest and most certain test of the moral worth of a man. For men with others, it is necessary to prevent them from following the impulses of all their worse propensities, and from striving to attain ends by the most unworthy means. The seat of the organ of conscientiousness is on the upper part of the head, on each side of that of firmness.

16. Hope is the sentiment which induces men to believe in the possibility of whatever their other faculties desire; it is not mere desire, for that may continue without any hope of attainment. This faculty, if well developed, will lead one person to be continually building, as it is said, castles in the air, and another to despair of success even in favourable circumstances. This sentiment also inspires the hope of a future state and of immortality of the body. Its organ is situated upon the side of that of veneration.

17. Love is the sentiment which induces men to believe in the possibility of whatever their other faculties desire; it is not mere desire, for that may continue without any hope of attainment. This faculty, if well developed, will lead one person to be continually building, as it is said, castles in the air, and another to despair of success even in favourable circumstances. This sentiment also inspires the hope of a future state and of immortality of the body. Its organ is situated upon the side of that of veneration.

18. Marvellousness is the sentiment which is principally manifested by a belief in miraculous and supernatural circumstances, and which leads men to be amused with every thing that can excite their surprise and wonder. Its organ is situated immediately in front of that of hope.

19. Ideality. Dr. Gall regarded the organ of this faculty as the organ of poetry, finding it much developed in all the great poets of antiquity and modern times. But it is also large in some, who though they may be fond of poetical conceptions, are not poets themselves. Dr. Spurzheim therefore believes that the essential nature of this sentiment is to impress a peculiar sentiment of grandeur or poetic ideal, and to vibrate the other faculties; to give a sense and love of beauty: to produce sublimity of conception, and excite warmth of imagination and expression. The organ of this sentiment is situated at the top of marvellousness, and the two frequently act together.

20. Mirthfulness or Wit. Spurzheim regards this faculty as affective, not as intellectual, in which view it is contested by Galvani and others. The Edinburgh school, however, describes it as a sentiment which disposes men to view everything in a gay or joyful manner, and which, according to its various applications in different circumstances, and its modifications by being combined with other faculties, produces wit, good humour, caricature, mockery, irony, sarcasm, epigrams, and satires. Its
organ is situated in the upper and lateral part of the forehead, and in the earlier Edinburgh casts is marked 32.

21. Imagination. Those who have this faculty highly developed are fond of acting and of imitating the gestures, voices, manners, and in general all the manifestations of the face and particularly in children more than in adults: the former always learn a great deal by imitation; of the latter some only employ it much, and these are usually marked by the gestures with which they speak, imitation; and manner of whatever form, is the subject of their conversation. Its organ is situated at the front of the head, and on each side of benevolence.

22. Individuality is in Spurzheim's arrangement the first of those intellectual faculties which perceives, and retains in the body the properties of their physical properties. It is the faculty which recognises the existence of individual beings. It is this also which in excess induces men to personify everything of which they speak, whether more qualities or abstract ideas, or even phenomena, such as motion, life, the passions, &c. Its organ is situated behind the root of the nose, and its greater development enlarges the forehead between the eyebrows.

23. Configuration is the power which takes cognizance of forms and figures generally. One of its peculiar applications, and that by which its organ was first discovered by Dr. Gall, is observed in the power which some individuals possess of remembering the forms and features of different persons, even in the lower parts of the body, or in the ability to take the likenesses of persons and things. Its organ is situated in the internal angle of the orbit, and when large it pushes the eyeball outwards and downwards, giving the eye a position in which it thus developed a somewhat squatting appearance, and making his eyes appear unusually wide apart.

24. Size. This is the faculty which measures the size of bodies, as distinguished from their form, which is acquired by the preceding power. Its organ is placed at the inner corner of the arch of the eyebrow.

25. Weight. It is believed that the mind estimates the weight and resistance as well as many of the other qualities of the mind by the sense of feeling, but by a peculiar internal operation, which must require a special organ. Dr. Spurzheim conjectures that its situation is behind the orbit, in the neighbourhood of configuration and size.

26. Colouring. There appears to be a peculiar faculty for the full appreciation of the relations of colour. For though few are incapable of perceiving the differences of colour in the objects around them, yet all have not the same power in this respect. All the curious facts of the sense of colour, or the faculty in recollecting or judging of their relations. Many artists who draw well cannot colour; others are good colourists, but cannot imitate or design forms. The organ of this power, which must from these and other similar circumstances be regarded as an organ of the faculty of mind, is placed in the middle of the arch of the eye-brow.

27. Locality. This is the faculty by which we appreciate and remember the places occupied by objects around us, the mental power which makes the traveller, geographer, and landscape-painter; which recollects localities, and gives notions of perspective. It is remarkably shown in the power which many animals exhibit in tracing their way through great distances in migration, or in returning to their homes; and it gives men the propensity to travel, which many have so remarkably exhibited. Its organ is placed above and on each side of the root of the nose.

28. Calculating. This might be called the faculty of arithmetical or geometric calculus: whatever concerns mathematics or calculation belongs to it, and hence Mr. Comte and many others speak of its organ as that of number. In those in whom the power of calculating is much developed, the external angle of the eye-brow is either much pressed downwards or elevated; the organ of this faculty being situated beneath that part of the brow.

29. Order. It is believed that there is a faculty which gives a positional and arrange order; for example, in a library to place books according to their size and form, in a collection of natural history to make each object occupy its right situation according to its configuration or colour or size. Cleanliness also seems to possess it, for it is the power which makes the things complete. Its organ is situated between those of colouring and calculation.

30. Eventuality. Individuals who have this organ large, are attentive to all that happens around them, to phenomena, to events, to facts; they are fond of history and of anecdotes; are inquisitive, and desire information on every branch of natural knowledge. Individuality takes cognizance of events, which make up the development of the facts, and eventuality, of things which happen, the names of which are verbs. The organ is situated in the middle of the forehead, and those in whom it is much developed have a peculiar prominence of this part of the skull.

31. Time. The faculty of time conceives the duration of phenomena, their simultaneousness or succession. Its organ is situated above the middle of the eye-brow.

32. Melody or Tune. The organ of tune bears the same relation to the emotions as the eye does to the perception of colour; the ear is the instrument by which sounds are heard, but it has no recollection of them, and does not judge of their relations; these are the offices of a peculiar and original mental power, whose organ is almost the outer part of the eye-brow, so that when much developed, it enlarges the lower and lateral part of the forehead.

33. Language. This is the faculty which makes us acquainted with arbitrary signs, which remember them, judges of their relations, and gives a disposition to indulge in all exercises connected with words. Its organ was the first that Dr. Gall discovered: in his youth he observed that while he had great difficulty in committing his lessons to memory, there were some which he learned by heart, even things which they did not understand so well as he did. He noticed that all these boys were 'bull-eyed,' that is, had a peculiar prominence of the eye-ball, which seemed to project from its socket. Subsequent observation enabled him to extend the same generalisation to the organs of language, which, when fully developed, he observed to situate at the very back part of the orbit, which is, with the eye, pushed forward by it when it is much developed.

34. Comparison is the reflective faculty which compares the sensations and ideas excited by all the other faculties, and points out their difference, analogy, similitude, or identity. It induces men to argue from analogy, to draw illustrations of facts from the objects from which they learn by parables, and explain by examples and similes. It leads to the invention and employment of figurative language, and according to the degree of its national development, the language of each country will be full of or deficient in figures and metaphors. Its organ is situated in the middle of the upper part of the forehead.

35. Causality. The reflective faculty which engages men in the study of the causes and origins of things, and which renders men judges of the relations of the phenomena of life and mind, is named. The faculty of individuality makes us acquainted with objects; eventuality, with facts; comparison, with the analogy, identity, difference, and other relations of things; and causality leads us to search for those faculties which, when fully developed, constitute the truly philosophic mind. The organ of causality is at the upper part of the forehead, on each side of comparison, and their coincident development gives the peculiar fulness of the front of the head, which is universally regarded as the sign of a powerful reasoning intellect.

Having now given a general view of the principles of phrenology, as stated in the writings of Dr. Spurzheim, and adopted by most of the present advocates of the system, it will probably be desirable to consider how far it is what 'professes to be, a system of philosophy of the human mind, founded on the physiology of the brain. (Combe, System of Phrenology, p. 1.) Neglecting for the present all metaphysical views of the soul or regarding the theory of the existence of some such primary faculties of the mind as are assumed in phrenology, and of the dependence of each upon a separate portion of the brain, as one deserving of being tested separately, it will be determined only how far the doctrine, as it now stands, is supported by facts of anatomy and physiology, and whether it is capable of being established by the evidence of craniological investigation.

Many of the objections commonly made against phrenology are undoubtedly of little weight: such for example are the statements that in consequence of the irregularities of some deafness, and of the thickness of the skull, it is impossible to determine its form; and that the organs of things do not. This objection only shows that there are sources of fallacy in the practice of craniology, a fact which no phrenologist denies. But on the greater part of the head, the differences of thick-
ness of the coverings of the brain are not such as would lead to error; the majority of them are nearly constant in their amount, and are easily recognised by any one ac-
quainted with the anatomy of the skull, and the rest are not so. They pursue in a manner of the sense to any part of the exterior of the head which would be regarded as indicative of excessive or deficient development of any organ. No one accustomed to post mortem exami-
nation can hesitate to admit that the form of the greater part of the exterior of the head corresponds as nearly with that of the surface of the brain as is necessary for cranio-
gical purposes. The parts in which the correspondence is often inexact are those over and in the neighborhood of the eyes, the nose, and the ears. The superficial bony covering of the frontal bone is variable, and would certainly in some cases make a moderately developed organ appear large; and still more the size of the frontal sinuses (the cavities between the plates of the frontal bone immediately above and by the sides of the root of the nose) must always be a source of fallacy in determining the size of that part of the adult brain in which the organs of form, individually, size, and weight, and part of that of locality are sup-
posed to be placed. The estimate of the supposed organ of language also, which is indicated by the prominence of the eye, must be liable to error from the varying quantity of the contents of the orbit. From these several circum-
stances it is not to be expected that in the parts of the brain that must in general be some difficulty in determining the size of these few parts of the brain. In consequence of disease also the whole or parts of the brain may diminish in size without being accompanied by any corresponding change in the size of the skull, and without there being any general rule the subjects of disease are excluded in phren-
ological observations. The objection that parts of the brain have been destroyed without affecting any of the faculties of the mind is also of little weight unless it be first proved that the organs are not double. The cases of this kind recorded before the promulgation of phrenology cannot fairly be deduced as evidence, because the statements which they contain relative to the preservation of the mental faculties, and the organs, are not only independent of the general rules of sensation, volition, memory, imagination, etc., and not the primary faculties of phrenologists, some of which might have been deficient without their loss being observed. The observations that have been made since, it must be confessed, are not of more weight against phrenology, than those of the loss of peculiar faculties (especially those of language and amasiveness) by injury and disease of the mind of which we are so fully convinced that the salaries of the brains of animals must be regarded as affording still less conclusive evidence; when a part of the brain is thus removed, the condition of the whole of the rest of its mass is altered by the removal of the pressure of the skull, exposure to air, and the interference with the circulation of its blood, etc. It is impossible that a cor-
rect conclusion upon any part of the functions of the brain should be drawn from experiments of this kind; and the whole of the arguments deduced from them by Rudolph, Magendie, and others, may therefore be neglected.

Fully admitting the insufficiency of these, as of some other objections to phrenology, we come to the consi-
deration of some which must be regarded as more important. If phrenology were true, it might be expected that its ap-
plications would extend through the whole animal kingdom, and that according to the degree in which each mental faculty is developed in each animal, we should find a certain proportion of individuals of the same species whose faculties, if one could be supposed to that of man. Yet this is so far from being the case, that phrenologists are compelled to rest their opinions almost exclusively on evidence derived from the comparison of the brains of different individuals of the same species, and to suppose that though many faculties are the

same in man and the lower animals, yet in each species they are manifested in some peculiar form and structure not admitting of comparison with those of man. This is evi-
dently contrary to the analogical mode of reasoning which they pursue in all things. The examination of the skulls of those in whom particular organs are supposed to be wanting, must therefore be too fallacious to admit of any conclusions being drawn from them.

Although, in most of the objections mentioned above, phrenologists insist on the necessity of comparing only individuals of the same species, it is to be ob-
erved that they seldom use the term species in the same sense as used by zoologists, but according to them the organs of man are obtained by the craniums of some animals, but parallel to the animals to which the brains"
them. But the numerous sources of fallacy which render the presumed facts for phrenology doubtful, present as great an obstacle to the collection of facts against it; and although its theories, which, if admitted, are not quite so fallacious as the other observations, can only be altogether overthrown by anything but well-ascertained facts, yet it is fair for any one to withhold his assent to it till he believes that it is supported by a sufficient number of positive and unequivocal observations. Moreover, to add still more to the weight of probability, he finds it opposed by some, however few, facts, and incapable of explaining several circumstances that might be expected to be placed under its laws. For these reasons the fallacies to which craniological observation is subject must be admitted as casting doubt upon the testimony of phrenologists, who, granting that they are unwilling to deceive, may yet, like all other observers, be charged with the liability to be themselves deceived. We believe that in this we do not stop at all when we can so commonly point to the rules of judgment and evidence, according to which it is open to every one to disbelieve statements and conclusions that seem to him improbable, although he may not be in a position to disprove them by fact.

Judging by these rules, the very perfection to which phrenology is supposed to have nearly attained is strong evidence of its improbability. No one will deny that, in its connection with the body, the human mind must be the most complex of its physiologies; and that, phrenology is true, the physiology of the brain is more advanced than that of any other organ in the body; and the improbability is presented that two physiologists accomplished more in the physiology of the body of the man than the science of life than the united generations of physiologists of all classes for near 2000 years have effected in the most easy. There is not one function of the living body which can be so perfectly illustrated as the most accurately the functions of the mind can be elucidated by a mediocre adherent to its doctrines; and this too while, to every source of fallacy which it has in common with other departments of physiology, it is subject to still greater which are peculiar to itself.

The improbability that the labour bestowed upon phrenology should have had so extraordinary a result, will appear greater, when one of the statements is pointed out to which the observations that serve for its basis are subject. Admitting that the size of a part of the brain may be taken as a measure of the power of the faculty of which it is presumed to be the organ, it can be a correct measure of power only in those conditions of the brain, are subject to phrenologists, who maintain only that, ceteris partibus, size is a measure of power; and it may be admitted that in this proposition they are supported by the anatomy and physiology of the body of man. They have therefore in the brain, the other conditions are fully as important as size; yet phrenologists in their usual practice refer to quality of the brain only when they find that the indications do not fully agree with the expected conclusions. Moreover the estimate which phrenologists make of the quality of the brain, by observing the external appearance and temperament of the individual, is fallacious as a measure of the state of the whole mass, and is valueless as a sign of the structural condition of each of its several parts. But any one part of the brain may as well differ from the rest in quality as in quantity; an assumption which the phenomena of local diseases, which are much more common than general diseases of the brain, are sufficient to establish, and which phrenologists themselves admit in their explanation of monomania. There is here therefore a manifest source of fallacy in every phrenological observation; a source of fallacy comparable with, but greater than, that to which men have so long obscured the knowledge of the more simple departments of physiology. No one who has had any opportunity of appreciating the difficulty of analysing observations of which such a varying source of error is a necessary part, can as well as a suspending that phrenologists, when they pretend to have overcome the difficulty, have merely wandered into the fallacies of error.

* Dr. Sprague and his followers constantly call upon the public to decide upon phrenology by their own observations; proving that they regard it as difficult to matter to observe and draw correct conclusions in the most ambiguous questions. This is in theory to some extent a mistake; but it is true that it will easily fail others. We cannot feel assured that persons who are disposed to believe all the assertions of phrenology will easily observe to observe. The more philosophic Dr. Gall did not fail to admonish his followers not to attempt repeating phrenology.

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Again, if the condition of quality (in which are included many important circumstances connected with both the temporary and permanent state of the brain, each of which is probably more fallacious than the others) is to be considered as a constant source of inappreciable error in estimating the material condition of the organs, there is scarcely less fallacy in the other element of a phrenological observation, the subjective impression of the individual who has been examined. The actions of men are taken as the index to their phrenological state; but (not to mention the cases in which men foign the possession of dispositions and sentiments denied to them) there is not a single act of judgment which, in a large number of instances, in which there is no intention to deceive, the same actions proceed from different motives, and this phrenologists fully admit, for in many cases in which the size of certain parts of the brain does not agree with the apparent character or the personal or moral conduct of the individual, the actions of the individual under examination to the excess or defect of some other parts of the brain. But if in one case an apparent disagreement between the state of the faculty and of its presumed organ, is an escape of explanation on the part of all other faculties and organs, then in every case that the state of all the other faculties must become an inappreciable source of fallacy in endeavouning to estimate the condition of any one.

It is unfair to make use of these supplemental modes of determining characters in cases that are opposed to phrenology, and not to admit their influence in those which seem to craniology. It is not always easy to look into the index of his mind—but if at the same time it is allowed that the same actions may result from different propensities, desires, and tastes, it is evident that it will be almost impossible to bring the evidence of facts to bear against phrenology, in which there must then be so many facilities of escape from conviction of error. If, to take an illustration from the writings of Sir G. Mackenzie, a young man in whom locality and inhumanity are very moderately developed is not necessarily impelled to the sequential genius, and by attachment to the mechanism of a ship, conjoined with perseverance, courage, love of approbation, and ideality, there can be sure to be no certainty that any one propensity is proportioned to the condition of a single organ other than to the combined condition of several others.

When we point out these sources of fallacy in every phrenological observation that has been made, and add to them the doubts which is cast upon it by the total absence of any anatomical peculiarity in the brain corresponding with the presumed separation of its organs, and by the failure of its application in the comparison of the psychical condition of man and animals, sufficient has been done to show that a person who is interested only in the doctrine apposite in withholding his assent from phrenology as it present stands. He may grant, as the writer does, that its theory is ingenious and probable; but that its plan of classifying the mind is probably more natural than that of any other plan generally adopted to the psychical system; that many of the assumed faculties admits of little doubt; that a comparison of the heads of different nations and individuals renders it almost certain that the general divisions of the part of the human cerebrum are correct; that in many cases, in balancing the evidence on each side, the result is on the whole favourable to the belief that the positions of several of the organs in each part of the brain have been nearly determined; but without appealed to go extended to the psychical system and that made with a just appreciation of the difficulties of attaining to facts, when so many of the elements of the observations are inappreciable, and conducted by a disposition to doubt rather than to find confirmation of the doctrine assumed, the doctrine (be it true) is urged further than as a direction to his inquiries, and will refuse to admit its applications in any important practice.

PHRONIMA, Latrellie's name for a genus of Amphiroidia.
Tail more delicate than the body, terminated by six styles (which are always long, at the end), and provided below with four or six natatory feet or papillae, under it, the third, fourth, and fifth rings; these feet being formed by a small joint for their articulation with the tail, of a large, oval, flattened joint, and two terminal filaments. (Desm.)

Examples, Phrynoma semiellipta and Phrynoma macrophalma. The first has an oblong body, yellowish anteriorly, red posteriorly; the head is provided with two small horns, which form a sort of crest; eyes small. Total length seven to eight lines.

Locality and Habits.—This species is rather rare in the neighbourhood of Nice, where it appears in the spring at the season of reproduction. Inhabits deeps on a sandy bottom. Eggs transparent.

Phrynoma macrophalma has an oblong violet-red body, with a transparent head; no horns; eyes very large, oval, and black; size less than half that of the preceding species. Found by M. Risso on Pyrossoma, in February and July; at the latter period pregnant, loaded with a quantity of very small globular eggs. (Risso.)

PHYROIGA (Ephyria), a country of Asia Minor. It is difficult to define accurately the boundaries of Phrygia, as they differ according to authors. The Romans supposed that it was bounded on the west by the river Sangarius, on the south by the sea, and on the north by the river Thyymbrius. The emperors it was bounded on the west by Caria, Lydia, and Mycia; on the north by Bithynia, on the east by Galatia and Cappadocia and on the south by Lydia, Pisidica, and Lycia. Before the establishment of the province of Galatia by the Gauls, who invaded Asia Minor, Phrygia extended as far as the Halys. The ancient writers speak of the Great and the Lesser Phrygia; but when Phrygia is spoken of by itself, the former is always intended, as the latter was only a political division, and was included in Mycia, which was inhabited by several Phrygian tribes. The northern part of Phrygia Proper was called Phrygia Epicetetus, or the 'Accroupiée', a name given to it when it was annexed by the Romans to the empire of Pergamos (Strabo, xii. 567); and the southern part, which bordered upon Mount Taurus, was called Phrygia Paroreus from this circumstance. In the fourth century the Romans divided Phrygia into two provinces, Phrygia Salutarius and Phrygia Paestiana; the former comprising the eastern and the latter the western part of the antient province.

Phrygia is a high table-land, supported on the south by Mount Taurus, and on the north by the high range of mountains which runs from west to east under the antient names of Ida and Temnon in Mycia, and Olympos in the neighbourhood of Brusa. Herodotus says (v. 49) that Phrygia is exceedingly fertile; but this remark must be applied only to the western part of the country. Since the antient country in the southern and eastern parts is covered with salt marshes, rivers, and lakes, which have no viable outlet, the

Of these salt lakes, the most curious is the one called Tatta by Strabo (Tarta), which is 30 miles in length, and supplies the inhabitants with fresh water. (Anatol. p. 494.)

The Phrygians are said to have been a very antient people. According to a ridiculous tale told to Herodotus in Egypt, Psammichthus, king of Egypt, made an experiment, and supposing the Phrygians to be a very antient people in his province, (Herod., iv. 167) he says in another part of his work (vii. 73), on the authority of the Macedonians, that the Phrygians were a European people, and originally dwelt in Macedonia, where they were called Beroe. After the defeat of Briges, which accounts for Strabo (vii. 292). They are said by Conon (apud Phot.) to have emigrated over into Asia a hundred years before the Trojan war. Xanthus says (apud Strab. xiv. 680) that they emigrated from Europe principally to the Trojan war; but, as Strabo remarks, this could not have been the case, as they are represented by Homer (Il. iii. 187) as settled on the banks of the Sangarius before that period.

We know scarcely anything of the early history of Phrygia. There appears to have been a kingdom of considerable power in the northern part of Phrygia under the Median or Gordian dynasty. Strabo remarks (xii. 568) that the palaces of Gordius and Midae were near the river Sangarius, and that the neighbouring country was the central part of the dominions of these sovereigns; and that such was the case is confirmed by an antient inscription discovered at Doganbu by Colonel Leake, in which we find written in the first of this dynasty of warriors whom we have an authentic account is Midae, the son of Gordius, who was the first of the barbarians who sent offerings to Delphi. (Herod., i. 14.) As Herodotus says that these offerings were earlier than those of any king of Lydia, Midae must have reigned before B.C. 718. The Phrygians conquered by Cressus and added to the Lydian empire (Herod., i. 28), and were subsequently subject to the Persians. (Herod., iii. 190.) On the division of the Persian dominions into five segments, Phrygia first came into the hands of Antigonus, and afterwards formed part of the dominions of the Seleucidae. After the defeat of Antiochus the Great, Phrygia was given to Eumenes, king of Pergamos, and on the death of Attalus, B.C. 133, it came by his bequest into the hands of the Romans, together with the other dominions of the kings of Pergamos. (Pergamos.)

In Northern Phrygia, the first town of importance on the west was Azan, near the source of the Rhyndacus (Jubon), which flows into the lake Apollonian. This town is not often mentioned by the antient writers, but it must have been a place of considerable importance, from the discovery of its ruins. Found by Mr. Hamilton (Journ., vol. iv.) to have been at Kiliseh Köşi, at the western extremity of the lake of Simikou.

In the south-eastern part of Phrygia was Strabada, one of the most important towns of this part of the province in the time of Piny, who says (Hist. Nat., v. 29) that it was a conventus juridicus for all the surrounding towns. Strabo however says (xii. 577) that it was not a large town, and that it was situated on the sands, but since the country in the southern and eastern parts is covered with salt marshes, rivers, and lakes, which have no viable outlet, the...
Apameia Cibotus to Galatia (Linn. xxxiii. 18), and also in the way, or nearly so, from Apameia to Iconium and Silicia. (Cic. ad Att. v. 20; ad Famil. iv. 4.) Colonel Leake (p. 64) thinks that the site of Synamda corresponds nearly to the modern village of Buiuwalun. At a short distance to the west is the village of Deir QC, which was celebrated for its marble quarries. It was of a light colour, interpersed with purple spots and veins, and was in great request among the Romans. (Strabo, xii. 577; Stat. Silv. i. 5, 37; Plin., Hist. Nat. vi. 100.)

The most important cities in Phrygia were situated in the south-western part of the province. Of these cities, Apamea was the most ancient. Herodotus says (vii. 56) that it is situated at the source of the river Meander, and he describes it as a city built on either side of the Meander. The Cartharactae appears to be the same as the Mysaryas of Xenophon (Xen. Anab. i. 2, 67) and other writers. Xenocrates, after his defeat in Greece, is said to have built here the citadel and a palace (Xen. Anab. i. 2, § 5). The younger Cyrus appears to have frequently resided at Apamea, where he had a palace and a great park full of wild beasts. Apamea was celebrated in Grecian mythology for the contest between Apollo and Marsyas. Xenophon says that Apollo hung up the skin of Marsyas in the cave whence the river flows. Near Apamea was Apameia Cibotus, which was founded by Antiochus Soter, who removed to the new city the greater part of the inhabitants of Apamea, which became in consequence of improved irrigation of Antiochus greater than the name of Apamea, from his mother Apama, who was the daughter of Artabazus and the wife at that time of Seleucus Nicator. (Strabo, xiii. p. 578; Liv. lxviii. 13.) Apamea seems, therefore, to have great weight in the history of that time. Strabo was second only to Ephesus in Asia Minor in commercial importance. Pliny says (Hist. Nat. v. 29) that it was the capital of a conventus. There has been considerable doubt respecting the site, and such aspects, from the testimony of Pococke, Mr. Andrews, and Colonel Leake, to have been at a place called Dinigar or Dunare.

South-west of Apamea and a little to the south of the river Lycus, was Colossae, which is mentioned by Herodotus (v. 58) and by Xenophon (Anab. i. 2, 30), and is a large flourishing city. Strabo (xii. 576) and Pliny (v. 29) however speak of it as only a small place. At Colossae there was formed a Christian church, chiefly, it appears, by the labours of Epaphras (Col., i. 7; iv. 12, 13), to which St. Paul, who does not appear to have ever visited Colossae himself (Col., i. 1), wrote an epistle. Colossae was destroyed by an earthquake, together with Hierapolis and Laodicea, in the ninth year of the reign of Nero (Oros., vii. 21), by which it suffered a great misfortune. In the time of the emperor Antoninus Pius the place was a place of considerable importance under the name of Chonae. Chonae is at present a small village, situated under a very high hill; the ruins of the ancient city may be traced for nearly a mile. (Anton., vii. 21; See Cret., vii. 93.) 186, 94-56.)

West of Colossae, and a little to the south of the Lycus, was Laodicea, which was a large commercial town in the time of Cicero (Ad Fam., ii. 17; iii. 5) and Strabo, (xii. 576). Pliny (v. 29) says that it was originally called Dioisopolis, and afterwards Rhaea; and we learn from Stephanus Byzantinus that its name was changed into Laodicea in honour of Laodice, the wife of Antiochus II. There was a Christian church at Laodicea in the time of the Apostles. St. Paul speaks of which church in his epistle, which to the Colossians (ii. 1; iv. 16); and St. John, in the book of the Revelation (iii. 14-16), rebukes their members for their lukewarmness in the cause of the gospel. Strabo says that Laodicea had for a long time been fed in the plains around it, and that their wool was considered superior to that of Miletus. The ruins of Laodicea, which are considerable, are seen a little below Denizli.

The nearest apparently Laodicea, to the north of the Lycus, was Hierapolis, which was celebrated for its mineral springs. (Strabo, xii. 629.) The ruins of Hierapolis, according to Chandler (Travels in Asia Minor, p. 290), are on the site called Pambouk kaleesi, and are about a mile in length. There were remains of a very large theatre and of other public buildings.

PHRYGIAN MODE. In ancient Greek music. [Monr.] PHRYNICHUS. Several persons of this name are mentioned elsewhere.

Phrynichus of Athens, the son of Polycratinus, was a disciple of Thespis, and a writer of tragedy. He was upwards of twenty years the contemporary of Aeschylus, and probably he was about so many years his senior. The titles of fourteen tragedies of Phrynichus occur, of which five have been supposed to be the productions of another Phrynichus, the son of Melanthus: but Bentley has clearly proved that this supposition is without any foundation, and that there was only one, which is this name.

Phrynichus first exhibited B.c. 511, and he gained the prize for his 'Phoenician Women,' (Phoenicea) B.c. 476, the subject of which was drawn from contemporary history, being the victory of Athens over the Persians. He appears from these dates that he was a dramatic writer during thirty-five years, but we know not the time either of his birth or his death.

Phrynichus received a great improvement in the tragedy which Thespis had introduced. He no longer sanctioned the ludicrous diversion in which Baccus and the Satyrs only were personated; but he derived the subject of his plays from the graver parts of mythology and history of his country. With the example of Aeschylus to stimulate him, he made still further advances.

One of his tragedies, 'The Capture of Miletus' (Miletvs dawos), referring to an event which took place B.c. 494, five years after Aeschylus won his first prize, is particularly mentioned by Herodotus (vi. 21). He relates that the poet melted the spectators into tears by his vivid picture of the sufferings of their Ionian brethren. It may be presumed that his 'Phoenician,' which won the prize B.c. 476, was marked by equal if not superior excellence. The beauty created by the vogue of the name of Phrynichus in such a way as to shew that he was esteemed a poet of no ordinary powers. But Phrynichus did not invent the dialogue; he had only one actor, who was derived from the old choral ode with the performance. The improvement of first adding the dialogue and shortening the chorus is due to Aeschylus; Phrynichus introduced female parts. No fragments of Phrynichus are extant. (Suidas, Lexicon; Bentley's Phaethur; Müller's Hist. of Greek Literature.)

PHRYNICHUS OF ATHENS, a comic poet, who flourished B.c. 430. Ten comedies of his are mentioned by ancient writers. Eight of these have been collected by Hertelius and Grotius. He is once quoted by Phrynichus who forms the subject of the next article.

Phrynichus (called Arrabbiatus by Photius; and by Suidas, the Sophist of Bitinia), flourished under the emperors M. Aurelius and Commodus, from A.D. 170 to 187. He has left a work entitled 'A Selection of Attic Tragedies,' in verses and prose (Atticus, fapaturus, xi, legendum), the object of which is to be found in the following words, and of certain forms of words, as alone authenticated by the writers of pure Attic diction. This work has been several times printed. The best edition is that of Lobech, Ant. Gr. ii. 93, 94-95. 96.)

Phrynichus, the grammarian, upon the same subject, accompanies the work of Lobech. Lobech has added six dissertations (which he calls Perarga, in six chapters), suggested by his investigations in editing Phrynichus. These dissertations exhibit deep learning and sound criticism, and are of great value independently of their relation to Phrynichus. Four indexes conclude the volume, one extended to 801 pages, besides eighty pages of preliminary matter. (Photius; Suidas; Fabrici.)

PHITHISIS (a Greek word, phitosignifying 'corruption,' 'decay'). It was the name given to any wasting or consumption from any cause, and was afterwards more distinctly specified, according to the organ in which it was supposed to originate: hence we had a Phthisis Hepatica, P. Pulmonalis, &c. but the word is now restricted to the disease produced by tubercles in the lungs, and commonly known by the name of consumption. An acquaintance with this disease, from which neither age nor sex is exempt, and no part of the habitable globe is free, have made the study of its treatment even to the course when once begun can rarely be stayed, whose commencement is frequently so insidious, and whose termination so fatal, must, above all others, be interesting; for if by any previous means, even by the advice of a knowledge of those influences which most frequently give rise to it that we can hope to attain our object.
peculiar to Phthisis are only the result of previous changes in the general system, an hereditary or acquired predisposition, cognizable by the physical condition of the patient, and by a disordered state of various functions; and which, though often abundant; whose origin can be ascertained. The organization of the organs, is not inconsistent with too great development and inordinate action of particular parts, and even with considerable physical power of the system. By far the most important and characteristic morbid change that occurs in Phthisis consists in the development of tubercles wherever they may be found; but as it is in the lungs that they most frequently manifest themselves, we shall describe them as they are seen in those organs. Tubercles of the lungs first appear in the lungs themselves, as transparent granulations, which gradually enlarge and become opaque in their centre; the opacity increases, till the whole mass becomes of a dull yellowish-white colour. After a certain time they begin to break down superficially, and give rise to excavations more or less considerable. In this way, almost the whole of both lungs may be invaded by a succession of tubercles, their healthy structure being absorbed as the tubercles become deposited, or involved in the destructive process consequent upon their softening. Tubercles, unlike inflammation, almost invariably commence at the summit of the lungs, where, as well as being more numerous, they are usually found in a more advanced stage of development, or in one of more destructive action. The extensive eruption of fresh tubercles is an important feature in this disease, as it explains the occasional recovery of patients labouring under consumption. A crop of tubercles may appear in the lungs, go through the various stages of development, and ultimately disappear to all the signs of confirmed Phthisis; yet provided the conditions which gave rise to them are removed, no fresh eruption may take place, and the patient shall recover. The relative frequency of tubercles in other organs differs considerably in the adult and in the infant. In the former, M. Louis, our greatest authority in all matters connected with Phthisis, has, with one exception, never observed them in any organ except the lungs, and he regards their presence in those last viscera as a necessary condition for their development in other parts. But in the infant this does not appear to hold good; the bronchial glands being more frequently affected than the lungs, in the proportion of 87 to 73. The brain and its membranes are likewise more subject to tuberculous deposits in the child than in the adult. The next most important lesion which is met with in phthisis is ulceration of the intestinal tract; but it is not an accurate term, and it is certain they but all present species characters peculiar to this disease and to no other, and exist in five-sixths of the cases which terminate fatally. The third peculiarity in reference to phthisis is the change that the liver undergoes; in this respect, the French pathologists have given the name of ‘ Foie Grass’, or fatty liver. Lastly, ulcerations of the epiglottis, larynx, and trachea occur so frequently, and with such uniformity of type, as justly to lead to the belief that they are a part of the disease. But besides these morbid changes, which are peculiar to this disease, complications of various kinds occur which are common to it and other chronic diseases. By far the most frequent of these are inflammations of the Pleura; so that it is extremely rare, in making the post mortem examination of persons who die of phthisis, not to find the lungs adherent, in part, or entirely, to the walls of the chest. Inflammation of the substance of the lungs is likewise a frequent complication in the latter stages of phthisis. Sign of the commencement of a slight cough, which at first excites no attention, but is regarded as a simple cold. The breathing is not seriously affected, nor is the appetite impaired. After a time the cough increases in frequency, is accompanied by expectoration of a clear frothy saliva: the breathing and pulse become a little hurried after meals and towards evening; and at this time of the day there is frequently experienced a sensation of a pressure felt in the chest, not infrequently continuing during the greater part of the night, and is succeeded towards morning by perspiration. The patient likewise becomes somewhat paler, and is languid and easily fatigued. In some instances the first symptoms are preceded by a more or less distinct chill, without perspiration. In others the cough becomes more frequent, especially during the night, and violent, it sometimes occasions vomiting; hoarseness, or loss of voice, is not unusual: the expectoration changes its character; it is less frothy, and more opaque: containing small particles of a yellowish curd-like substance; or the spouts are streaked with dull yellow lines; and haemoptysis is very frequent, but in general not a bloody, rising and pulse are more hurried: the fever is greater; and the perspirations copious; pains in the thorax, denoting pleuritic inflammation, often occur; and the languor and emaciation still increase. In the last stage of consumption there is nearly always profuse diarrhoea, and violent and persistent emaciation, and expectoration continues copious: the latter becomes more uniform in composition, and is separated into roundish distinct masses, with fleecy edges. The emaciation and debility keep pace with the diminution in the organs, and towards evening: the appetite generally declines in the same proportion, and the patient dies in the extreme degree of marasmus, not unfrequently flatterbly himself to the last with a speedy recovery. In females the menstrual discharge almost always ceases when hectic fever is established; and occasionally even before that is the case, which has led to a popular opinion that the disease in such cases arises from the suppression. Such are the ordinary symptoms presented by Phthisis in its most usual form; but varieties exist in the order and duration of the morphological phenomena. Thus, tubercles may be developed in the lungs, and remain for a considerable period without exciting either cough or expectoration, or undergoing any general symptoms. In other cases they give rise to intense general symptoms: anorexia, emaciation, anorexia, before they excite cough or expectoration; the latter appearing only a short time previous to death. To these cases the term Latent Phthisis has been applied; and an extreme form of the disease, in which an appreciable organic alteration in organs whose functional derangement was most violent; while the only vixus really affected seems functionally healthy. The term Acute Phthisis is applied to those cases in which the disease goes through all its stages with unusual rapidity. It occurs most frequently in the young, and in those weakened by some previous disorder. In popular language it is designated as phthisis consummata, a term which has given rise to some of the last, and comprehends all those cases in which the process of the disease is unusually slow and generally intermittent.

Diagnosis of Phthisis.—Auscultation and percussion are the chief means by which we arrive at the diagnosis of phthisis (Auscultation; Percussion); but there are several collateral circumstances which must be taken into consideration in order to form a correct opinion as to the nature of the disease. It is at the commencement of phthisis that a diagnosis of it is possible, as it is the only time in which the stethoscopic signs are least evident. We shall therefore more particular in enumerating the indications at this period, than in accurately describing the acoustical phenomena at a later stage of the disease. As bronchitis is the disease from which phthisis is most liable to be confounded, we shall place in juxtaposition the principal points in which they differ. In the greater number of cases of phthisis the cough comes on without any evident cause, and many months may elapsed without expectoration. This apparent absence of cause and dryness of cough are of themselves very remarkable, and differ from what occurs in simple bronchitis. Thoracic pains, when present in the latter affection, are generally felt in the middle of the sternum; while in phthisis they are situated in the sides of the chest and between the shoulders. Haemoptysis, from the commencement or during the progress of cough, is frequent in phthisis. In bronchitis, coughing is the ceasing of expectoration, and not from the presence of fluid in the bronchi, as is the case in bronchitis. Thus the expiration, which in health is scarcely audible, becomes more distinct; the voice more resonant; the sound elicited on percussion dull. These phenomena have been observed frequently in the case of phthisis; in the examination of the parts, like the development of tubercles, take place from the summit to the base of the chest; and at first are almost constantly confined to the upper lobe of one side. In
bronchitis the sounds result from fluid in the bronchi, and originate in the lower part of the chest, and usually on both sides. In the more advanced stages of phthisis its diagnosis is less difficult, and is made from a consideration of the stupas, which we have already described, and from the signs furnished by percussion and auscultation. These are now decisive; the upper parts of the chest are dull on percussion; the respiratory murmur is strong, coarse, or even cavernous under the clavicles; and the voice listened to in the same situation gives rise to that peculiar phenomenon termed pectoriloquy. If there should be much fluid in the lungs, utilizing from the patient's not having lately expectorated, we then have a mucusy rattle in all those parts of the chest corresponding with the seat of the disease; and where cavities containing fluid exist, the air passing through this produces that gurgling noise to which the term gargoullement has been applied by the French. The space in which these different changes take place is at first limited; but it daily increases, and in some instances, where the entire upper lobe of the lung is converted into numerous excavations, the respiration is coarse and more or less tracheal throughout its whole extent. The diagnosis of latent phthisis is not difficult, provided we make use of the proper means for ascertaining the condition of the pulmonary organs; the evil is, that the attention is directed exclusively to those functional derangements which we have spoken of when describing latent phthisis, while the real seat of the disease is overlooked.

**Duration and Mortality of Phthisis.**—Various circumstances affect the duration of phthisis, as age, sex, constitution, occupation, season of the year, climate, &c. In the upper ranks of life, where patients have all the advantages that a proper regimen, change of air, and good medical treatment can afford, the average duration of the disease is considerably above that exhibited in the table below.

<table>
<thead>
<tr>
<th>Duration of Disease</th>
<th>Number of Cases.</th>
<th>Number of Cases. Total.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>4</td>
<td>6</td>
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<tr>
<td>3</td>
<td>5</td>
<td>12</td>
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<tr>
<td>4</td>
<td>11</td>
<td>14</td>
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<tr>
<td>5</td>
<td>9</td>
<td>18</td>
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<tr>
<td>6</td>
<td>9</td>
<td>18</td>
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<tr>
<td>7</td>
<td>2</td>
<td>4</td>
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<tr>
<td>8</td>
<td>11</td>
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<td>9</td>
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<td>10</td>
<td>4</td>
<td>8</td>
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<tr>
<td>11</td>
<td>1</td>
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<td>12</td>
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<td>13</td>
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<td>6</td>
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<td>14</td>
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<td>2</td>
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<td>15</td>
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<td>6</td>
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<tr>
<td>16</td>
<td>3</td>
<td>6</td>
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<tr>
<td>17</td>
<td>2</td>
<td>4</td>
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<tr>
<td>18</td>
<td>1</td>
<td>2</td>
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<tr>
<td>19</td>
<td>1</td>
<td>2</td>
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<tr>
<td>20</td>
<td>1</td>
<td>2</td>
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<tr>
<td>21</td>
<td>0</td>
<td>2</td>
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<tr>
<td>22</td>
<td>0</td>
<td>2</td>
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<tr>
<td>23</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>24</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td><strong>Years.</strong></td>
<td><strong>14</strong></td>
<td><strong>14</strong></td>
</tr>
<tr>
<td>3</td>
<td>6</td>
<td>5</td>
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<tr>
<td>4</td>
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<td>9</td>
<td>6</td>
<td>5</td>
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<td>10</td>
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<td>5</td>
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<tr>
<td>11</td>
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<td>12</td>
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<td>16</td>
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<td>17</td>
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<td>18</td>
<td>6</td>
<td>5</td>
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<tr>
<td>19</td>
<td>6</td>
<td>5</td>
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<tr>
<td>20</td>
<td>6</td>
<td>5</td>
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<tr>
<td>21</td>
<td>6</td>
<td>5</td>
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<tr>
<td>22</td>
<td>6</td>
<td>5</td>
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<tr>
<td>23</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>24</td>
<td>6</td>
<td>5</td>
</tr>
</tbody>
</table>

The mean duration of 314 cases exhibited by this table is 23 months, including the extreme cases; but 160, or more than half of the cases, terminated in 9 months; and the greater proportion of them between the fourth and ninth month. By excluding those cases which terminate within four months, and those that exceed four years, the average duration of the remaining cases is eighteen months. With regard to the mortality from phthisis, it varies in different climates, ages, sexes, races, and occupations. In England and Wales, according to the 'Report of the Registrar-General of Births, Deaths, and Marriages,' lately published, it is 19.53 per cent. of the total number of deaths, or 3.92 annually out of 1000 living. In France it is about the same. On the eastern frontiers of the Cape of Good Hope, where the atmospheric vicissitudes are sudden and great, the thermometer in summer sometimes varying from 116° to 64°, and in winter from 75° to 32° in the course of a few hours, it is only 34. Pessiming that a greater number suffer from phthisis among the military than the civil population, the following table, from Major Tulloch's 'Statistical Reports,' shows the number of men attacked annually by phthisis out of 1000 of white troops, at each of the following stations:

<table>
<thead>
<tr>
<th>Station</th>
<th>Deaths annually per 1000 from all diseases of the lungs at the same stations.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10 + 4</td>
</tr>
</tbody>
</table>

In the perusal of this table it must be borne in mind that the total mortality from all diseases of the lungs in the foreign stations appears to be less than it really is. This arises from many of the patients being invalided, who, if they die on their passage home, or after their arrival in Britain, are not included in the returns of the station where their diseases originated.

It may be here interesting to compare the influence of this class of diseases throughout the different stations where negro troops have been employed:

<table>
<thead>
<tr>
<th>Station</th>
<th>Died annually per 1000 by diseases of the lungs in Black troops.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>6 + 5</td>
</tr>
</tbody>
</table>

Nearly two-thirds of this mortality arise from consumption. Thus, in his native country the negro appears to suffer from these diseases in a less proportion than British troops in their native country; but so soon as he goes beyond it the mortality increases, till in some colonies it attains to such a height as seems to preclude the possibility of his race ever forming a healthy or increasing population. The Hottentots in our army at the Cape of Good Hope suffer more from diseases of the lungs generally than the European troops; while the proportion of those who die from phthisis is about the same. In both cases the mortality is below the average, as is seen in the table before referred to.

The natives of some tropical climates seem so little subject to diseases of the lungs, that among 74,820 native troops serving in the Madras presidency, the deaths, by every description of disease of the lungs, did not, on the average of five years, exceed one per 1000 of the strength annually.
The period of life above puberty at which the greatest mortality from phthisis occurs is between 20 and 40, as will be seen by the following table; and it is worthy of remark that although the number of deaths from phthisis is more considerable from 20 to 40 than from 40 to 60, the general mortality is the first in the same period.

Died of phthisis at the following ages:—

<table>
<thead>
<tr>
<th>Age</th>
<th>Deaths</th>
<th>Lowry’s</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 to 20</td>
<td>11</td>
<td>10</td>
<td>21</td>
</tr>
<tr>
<td>20 to 30</td>
<td>39</td>
<td>23</td>
<td>62</td>
</tr>
<tr>
<td>30 to 40</td>
<td>33</td>
<td>23</td>
<td>56</td>
</tr>
<tr>
<td>40 to 50</td>
<td>23</td>
<td>11</td>
<td>34</td>
</tr>
<tr>
<td>50 to 60</td>
<td>12</td>
<td>15</td>
<td>27</td>
</tr>
<tr>
<td>60 to 70</td>
<td>5</td>
<td>8</td>
<td>13</td>
</tr>
</tbody>
</table>

In respect of sex, consumption destroys more females than males, in the ratio of 4:135 to 3:771. This includes the whole of England and Wales, and it also regards some cities and most of the mining districts. In these the pursuits of a large portion of the male population seem particularly inimical to health, and raise the mortality from phthisis nearly to what it is in the female, and in some places even above, as will be seen in the following abstract from the Registrar-General’s Report:

Died of phthisis from July 1st to December 31st, 1837, in the metropolis, whose estimated population on the 1st of October, 1837, was 4,780,300, and who are exposed to the influences of the large towns, and the districts of:—Bath, Birmingham, Bradford, Cambridge, Carlisle, Clifton, Derby, Dudley, Exeter, Leeds, Leicester, Liverpool, Manchester, Maidstone, Newcastle-on-Tyne, Northampton, Nottingham, Stafford, Sheffield, Stoke-on-Trent, Sunderland, Wolverhampton, and Wigan, whose estimated population at the same period was 1,765,710—

<table>
<thead>
<tr>
<th>Metropolis</th>
<th>Counties</th>
<th>Metropolis</th>
<th>Counties</th>
</tr>
</thead>
<tbody>
<tr>
<td>1837</td>
<td>1325</td>
<td>1830</td>
<td>1466</td>
</tr>
</tbody>
</table>

These tables point out generally the influence of occupation in the production of phthisis. In cities the majority of the deaths from consumption are caused by the use of tobacco in the arts, trades, and manufactures, and generally for many hours together in ill-ventilated apartments, and in unhealthy postures of body. In the country the pursuits of the same class of persons are chiefly agricultural. Among the most evil is the mortality from phthisis in connection with climate, race, age, sex, and occupation, we are enabled with greater advantage to examine into those causes which appear to be most active in its production.

Causes of Phthisis. — The causes of phthisis, says Sir J. Clarke, may be divided into ‘the remote and the exciting, or those which induce the constitutional predisposition, and those which determine the local deposition of tuberculous matter after such predisposition is established.

The one class of causes operates by modifying the whole system; the other, by determining in a system so modified the particular morbid action of which tuberculous matter is the product. Of the remote causes, or those which induce the local deposition of tuberculous matter, there are several classes, of which the most general is that which arises from hereditary transmission; not that an individual born of consumptive parents will himself necessarily fall a prey to the same disease, but that, when exposed to those influences which we are about to enumerate as determining the tuberculous cachexia, he will be more likely to become affected than one born of healthy parents. Next to hereditary transmission the consumptive family, this, the causes most active in producing a state of constitutional predisposition, is that which is most frequent, and appears to be especially when associated with a confined posture of the body and impure air; bad quality or insufficient quantity of food; insufficient clothing; excessive mental or bodily labor; mental depression in question, or pestilential air, which agents which operate in depressing or lowering the tone of the system generally act as remote causes in the production of phthisis. The more immediate or exciting causes of consumption, those which determine the deposition of tubercles, have usually been attributed to irritants acting locally on the bronchial tubes or on the lungs, whatever occasioned by inflammation of these parts or by the mechanical action of irritants on the bodies upon them. The result of the latest investigations on this subject leaves no doubt that these causes are not primary in their influence in its production than any other disease. They may indeed occasionally intensify the development of tubercles, but they exert no specific effect, and they act only as remote causes if the predisposition is not of the large lungs.

The conclusion of Louis, which have been deduced from his own observations in hospital practice solely, receive ample confirmation from the admirable Statistical Reports of the Registrar-General, and Major Tulloch, which we have before referred to. The popular error of attributing consumption to cold, the breaking of a blood-vessel, &c., has probably originated from mistaking the effect for the cause. We have shown in a former part of this article that cough and hemoptysis are among the earliest symptoms of tuberculous lungs. With regard to mechanical irritants, as dust of various kinds, noxious gases, smoke, &c., ‘no opinion has been more prevalent,’ observes Dr. Cowas, ‘than that those dusts, whether of impure dust of vegetable, mineral, or animal substances, are principally due to phthisis; and in the supposition that consumption was essentially a disease of the lungs, and in the great majority of instances the result of bronchial inflammation, no conclusion was more generally drawn or more freely removed from the mind the impression of a necessary connection between bronchitis and tubercles, and we feel persuaded that the examination of the evidence brought forward on the subject of dust will terminate in the belief that this agent exerts at most but a very secondary and unimportant influence in the production of phthisis.’

The mortality among the workmen in some of our manufacturing towns is usually brought forth, perhaps in support of the doctrine of mechanical irritation. Dr. Knight of Sheffield informs us that there is not an example of a polisher of forks reaching his 36th year, nor do the artizans in other departments attain a much greater age. But it must be recollected that many of these men work sixteen hours a day in a close atmosphere and confined posture of body, two conditions which contribute perhaps more than any other to the increase and production of phthisis. Nor has the mortality been diminished by many of these men’s taking air, and the other remedies which have been successively tried for the purpose of arresting the metallic particles. In the cases of 857 quarrymen, 557 stone-cutter, and 160 marble workers, all of them occupation connected with the inhalation of dust, Mr. Benauston found the proportion of phthisis on an average very little above the general average; but then these are employments carried on in the open air. Dr. Lombard, whose researches are founded on a total of 4300 deaths from phthisis, and 54,372 individuals, exercising 229 different occupations, found, by a comparison of all the professions carried on in the open air and in workshops, that the proportion of deaths from phthisis was double among the latter; and this proportion increased as the apartments were close, narrow, and imperfectly ventilated.

Mr. Watson, a surgeon of Wensleyhead, a mining district, informs us that, out of 74 men working during four or five months for sixteen hours daily in a mine where a candle burnt with difficulty, one was attacked with phthisis, and a salmonautical affection. But whether from the inhalation of noxious gases or from other causes, it is certain that in the majority of the mining districts of this country the mortality from phthisis is higher than the average, and this disease in Cornwall exceeds that of the females in the ratio of 170:40, and in the mining parts of Staffordshire, Shropshire, and Worcester, in the ratio of 203:191; while in the non-mining districts of Staffordshire and Shropshire, and in the county of Cheshire, the ratio is 266 miles to 796 females.

The influence of smoke, when combined with other agents of injurious tendency, may, we think, fairly be called in question. The subject which has been found so smoky place in the whole kingdom, the mortality of females from phthisis is below that of most of our large manufacturing towns, and is not much above the average for the
whole of England and Wales. In London likewise this is the case, and in nearly the same proportion, as will be seen in the following table of the relative mortality of females from phthisis in each of the under-mentioned cities, and in England and Wales:—

<table>
<thead>
<tr>
<th>Country</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>England</td>
<td>401</td>
<td>494</td>
</tr>
<tr>
<td>Ireland</td>
<td>350</td>
<td>463</td>
</tr>
<tr>
<td>Wales</td>
<td>367</td>
<td>356</td>
</tr>
</tbody>
</table>

Annual Deaths to 100,000 living.


It must not be forgotten that in these towns a large proportion of the female sex is occupied in those kinds of employment that we have before shown to be so prejudicial:—how much more must be attributed to the unhealthy and unhealthy occupations that have expounded the account? From what we have advanced against the operation of local irritants as causes of pulmonary consumption, we by no means wish to be understood as deprecating the use of any means calculated to get rid of this source of irritation; but we merely propose to show that they act a very inferior part, and, when unassociated with those circumstances which modify the system in general, their real activity as causes of pulmonary tubercles is problematical, and would in the best case be far from the production of one fact, which in truth is the only one that we have met with, in evidence of a direct local irritation giving rise to tubercles. This fact is related by the late Baron Du-Suyau of Montpellier, who brought it to the notice of Hdl Denu for the first time, as a surgical complaint, of which he died. On examining the body after death, a marble was found impacted in one of the bronchi; around this spot, but in no other part of the body, was the small crop of tubercles.

A moist and changeable climate has been regarded hitherto as among the most active causes of consumption; and Great Britain, whose climate combines these two conditions in a remarkable degree, has been looked upon as such a nursery for phthisis that our faceless neighbours on the other side of the Channel have styled it 'La Maladie Anglaise.' Indeed the notions of atmospheric vicissitudes, dampness, and consumption, seem almost inseparable. Foreign nations have long since been under a severe scrutiny, and the evidence we at present possess on the subject tends very strongly to disprove their correctness. Moisture and climate, like all other agents, act either locally or generally: popular belief has attributed their presumed prejudicial effects to local action. They tend, it is said, to produce catarrhs and coughs, and consequently consumption. We need scarcely allude again to the fallacy of this opinion. We are in possession of little information relative to the mode in which climate operates to the production of phthisis. That the disease prevails to a much greater extent in some climes and localities than in others, is an indisputable fact; but it is no less certain that its prevalence is not exclusively due to the climate, since diseases of the same kind are observed in a much less degree than those whose thermometric range varies little through the year. Nor does it appear that moist climates and localities are more inimical in this respect; indeed consumption is said to be rare in marshy districts; and Dr. Wells has brought forward a variety of interesting observations to prove that the causes of intermittent fever induce a state of constitution which is a protection from consumption; and he says that in countries where one prevails, the other is always absent, or at least much less prevalent. This certainly coincides with what has been observed on the western coast of Africa, the climate of which is moist in the extreme, yet the prevalence of phthisis there is much less than in the countries of variable temperature, for many of such countries suffer in a much less degree than those whose thermometric range varies little throughout the year. Nor does it appear that moist climates and localities are more inimical in this respect; indeed consumption is said to be rare in marshy districts; and Dr. Wells has brought forward a variety of interesting observations to prove that the causes of intermittent fever induce a state of constitution which is a protection from consumption; and he says that in countries where one prevails, the other is always absent, or at least much less prevalent. This certainly coincides with what has been observed on the western coast of Africa, the climate of which is moist in the extreme, yet the prevalence of phthisis there is much less than in the countries of variable temperature, for many of such countries suffer in a much less degree than those whose thermometric range varies little throughout the year.

Of the mortality from phthisis in many countries which are remarkable for the equality of their temperature, have been already adduced in a previous part of this article, where it has also been shown that the Madras presidency of India, which has been estimated at 73° Fahr., the prevalence of consumption in this country is not understood. It has been laid down as a general principle, that the change from a variable temperature to one of an opposite description is in the highest degree advantageous, and, of course, it is true that this may safely be admitted, but in recommending patients to climates which possess this uniformity of temperature, it has been too often overlooked that there are other counteracting circumstances which more than neutralise this advantage. Examples of the mortality from phthisis in many countries which are remarkable for the equality of their temperature, have been already adduced in a previous part of this article, where it has also been shown that the Madras presidency of India, which has been estimated at 73° Fahr., the prevalence of consumption in this country is much less than in the countries of variable temperature.
ected that this mode of treatment, being unfavourable to improvement of the general health, should only be enforced when exposure to the air is constantly attended with increase of the symptoms. The invention of the respirator in a certain case impressed the mind of a philosophical patient, when warmly clad and furnished with this instrument, may be allowed to take exercise in the open air, not only with impunity, but with positive benefit. As regards the use of medicines, in this respect, the general treatment of phthisis, emetics must be first mentioned. It is remarkable, says Dr. Young, that a very great majority of the eues of consumption related by different authors have either been performed by emetics or by de- cants. Occasionally, it has been observed, that the efficacy of vomiting are general, and not confined to the stomach. The mechanical pressure upon the abdominal and thoracic viscera, the influence upon the arterial and venous circulations, the effect on the system, and the subsequent diaphoresis, all point out that the action of vomiting is general and complicated; and, associated with the benefits resulting from sea-yenages, swinging, &c, there is every reason to believe that the use of emetics in incipient cases of phthisis is satisfactorily demonstrated.

From the efficacy of bark, sarsaparilla, iron, and iodine, in scrofula and some other diseases attended with constitutional debility, it has been imagined that these medicines might be beneficially employed in phthisis; and there can be no doubt that their tonic properties, when not contraindicated by the existence of inflammation or much fibrile excitement, may safely be put in requisition in the treatment of this disease. It would be a mistake to consider the different nature, but not less efficacious when judiciously applied, may be called anti-inflammatory. Such are bleeding, either general or local; mercury, digitalis, counter-irritation. The last is one of the most powerful therapeutic agents that we possess, and, like all other remedies, when used in the commencement of disease presents the greatest chance of success. It is inapplicable when much fever is present, and should never be carried to the extent of producing constitutional disturbance.

These are the general remedies employed in phthisis. The more prominent symptoms of the disease require to be combated by particular medicines which we have yet to name, or by a combination of those just enumerated. One of the most constant and harrowing of the symptoms of consumption is cough, which, by interrupting sleep and accelerating the circulation, exerts an injurious influence over the general comfort and health of the patient. It may be traced to the application of stimulants, tartar emetic ointment, or stimulating plasters to the walls of the chest; or the direct local application of the vapours of chlorine and iodine to the internal surface of the bronchial tubes by means of inhalers. In both these measures, the cough may be calmed by mucilaginous mixtures, decoctions of Iceland moss, small doses of hyoscyanus, Prussie acid, opium, aether, &c. Perspirations in phthisis are common, and when profuse, tend to weaken the patient. They are checked by extempore remedies. The sulphuric acid given in bark, or the nitric acid in a decoction of sarsaparilla, are the most eligible combinations for combating this symptom. We have seen that the diarrhoea which takes place in phthisis, is the result of inflammation and ulceration of the intestinal canal: a knowledge of this fact will at once regulate our treatment. All stimulating food and medicine must be avoided; the external surface of the body must be kept warm; gentle counter-irritation may be made to the latter, and small doses of rhabard and opium, chalk and opium, or lime-water and milk, may be given internally. With respect to the treatment of pneumonia and pleurisy, which are so frequent in the latter stages of phthisis, we cannot be too cautious. It must never be forgotten that they are mere complications; and in any depletory measures which may be thought necessary, the original disease upon which they are so superadded, must not be lost sight of. Of the whole, local bleeding by leeches or cupping is preferable to venesection, and counter-irritation to both. For a full account of humoptysis and its treatment, see HUMOPTYSYS.

It is peculiarly abundant in the adjoining Goorkhalee province of Dolce, where the butter forms an article of commerce. Hence, in its crude state, it is cheaper than ghee (clarified butter), and is used to adulterate that article. It answers well for lamps, burning with a bright flame, neither the smell nor the smoke being so great as to be hurtful. As is the case with other phthisic medicines, the use of it in phthisis in Kunnan, used it for this purpose in preference to coral-nut oil. This substance has been analyzed by Mr. E. Solly, who describes it as existing in the solid form at ordinary temperature.

The oil of opium, which is perfectly melted, and appears then as a pale yellow oil. A species of the phulwa which was brought to this country five years previously was found to consist of sixty parts of solid oil, thirty-four of fluid oil, and six of vegetable impurities. See MR. Swainson's article in the Journal of the Royal Asiatic Society, vol. IV. 1833. The article KUMAON, vol. V. 1839.

Leucostrius, Mr. Swainson's name for a genus of Merulidae, placed by him in his subfamily Brachyopinae, or Short-forked Thrushes. For the generic character see the article MERULIDAE [vol. XV, p. 121]. The name was given, as Mr. Swainson observes, in consequence of one of the species, according to Le Vaillant, loving to shelter and hunt among heaps of decayed leaves. Mr. Swainson further remarks that, as yet, but two species are known, and these are from the African continent; the long straight bill of these, he adds, is continued to the genus Mirucopus, Sw. (Classification of Birds, vol. ii.)

PHYLLODIUM. Local name for a family of Gastropoda Mollusks, including the genera Phylidia, Chitoniellus, Chiton, Patella, Patellodes, and Sphynoria.

M. Deshayes, in the last edition of Lamarck, observes that zoology's knowledge as to the classification of the genera which Lamarck has collected in this family under the common character of having branchiae placed circularly round the body between the foot and the mantle. In the first edition of the 'Rame Animal,' he remarks, Cuvier formed at the end of his Gasteropoda a small family under the name of Cyclorhanchias, in which he places the Chitons and Limpets, whilst he arranges the family of Inferorbranchiaceae, containing the Phylidiaceae and Diplomphylidiaceae, at the commencement of the Gasteropoda. Nevertheless it may be said, with reference to the disposition of their branchiae, that these last two genera are as much Cyclorhanchias as the Limpets and Chitons; but, adds M. Deshayes, Cuvier doubtless found in the organization of these different mollusks sufficient reasons for separating them. M. de Férussac, in his systematic tables, preserved the two families of Cuvier in the same position, but converted them into orders. That of the Inferorbranchiaceae was augmented by the genus Umbrella, and the order of Cyclorhanchias divided into two families, the Limpets and the Chitons. M. de Blainville (Malacologist) proposed another distribution of the Cyclorhanchias of Cuvier. The former zoologist recommended the Inferorbranchiaceae to be reduced to the order of Monocerata, towards the end of the Monocerata Mollusks; but considering the Chitons as a type intermediate between the Mollusks properly so called, and the Cachipeda, he made in his arrangement a subfamily named Sphynoria, composing assemblage of these two kinds of animals, dividing them into two classes, one of which, the Polyplaxiphora, was for the Chitons. With the exception of M. de Blainville, the opinions of other naturalists may be regarded either to that of Cuvier or that of Lamarck. M. Deshayes says, in conclusion, that after having for a long time directed his special attention to this question, he thinks that the mollusks comprised by Lamarck in his family ought to be separated; for instance, as Chitonaceae, and enclosed than the phylidiaceae; others, the Phylidiaceae namely, are monocious.

PHYLLODIUM is that organ which in the greater part of the New Holland Acacias, or wattles-trees, stands in the place of leaves. When such plants are young, they are clothed with the pinnated leaves, characteristic of the Acacias of extra-Australian countries; but the leaflets soon drop off or cease to appear, and the petiole enlarges from a mere connection of the leaf to the shoot, and the expansion which presents one of its edges to the sky and the other to the earth. That expansion is the phylodium, which is therefore a peculiar modification of the petiole, whose surface is extended in order to compensate for the diminution of the leaf. The expansion of the leaf is upon the loss of the leaflets by which those functions would be otherwise performed.

PHYLLOPODA, Latreille's name for a section of crus-
taceans which have the head confounded with the trunk; the eyes sensitive, smooth, and closely approximated; a delicate buckler formed of a single piece, and free posteriorly, serving as a crust or shell; two horni demi-cylindrical mandibles, with a compressed, straight, and very dentilated point, but without the typical point, in the form of cones, and terminated by articulated bristle-like appendages; the other branchial, and more than sixty (pairs) in number, disposed for swimming.

The genus Phalangium (Biscoeii, Geoffr., Leach; Lam., M. Linn. Fabr.) will serve as an example of the Phyllopoda. Biscoeii. N. B. The printer has reversed the cut, and placed the tail uppermost.

LIOSSOMA. The family of Double-custy-cased Crustaceans (Bicuvirostes), is composed of forms which are very remarkable for their rounded shape and the transparency of their tegumenta. The carapace is large, lamellar, extended like a leaf horizontally above the base of the antennae and a more or less considerable portion of the thorax. The thorax is equally depressed, so as to resemble a thin blade or plate horizontally, and to the existence of these two bucklers, so to speak, the name the new (Bucuvirostes) given to them by Latreille. The cephalic ring is but little if at all distinct from the interior border of the carapace, and it is from this border also that the antennae spring. The eyes are very large and projecting. The antennae spring below and behind the carapace, on the true transverse line, and are directed forwards; those of the first pair are bifid at the end, and the conformation of those of the second pair varies. The mouth is situated very far from the base of the antennae, and the anterior edge of the middle surface of the carapace; it has the form of a rounded tubercle, and is composed essentially of a large upper lip, a pair of hooked mandibles which want a palpiform stem, a membranous and bilobated lower lip, and a pair of jaws; sometimes they can be found a second pair of jaws and even jaw-feet applied against the mouth, but in general those organs are rudimentary and thrown rather far backwards. The great flattened blade or plate, which constitutes the thoracic and abdominal wall, bears the mouth of the thorax presents no annullar divisions; in general it reaches a good deal beyond the carapace, and gives insertion to the feet by its lateral borders, so that those organs are very distant from the median line. The number of feet consists of from seven to eight pairs, but those of the first pair, and, sometimes, those of the last, are very short, whilst the others are very long; all are very slender, and lead, towards a third of their length, a large biflabiliform appendage, which is prolonged to the external branch of the thorax. Both lateral and median, from which leaves part of the thorax exposed. In Amphiion, the carapace hides the thorax entirely.

Phyllopora. (Leach.)

Generic Character.—This, one of the most remarkable genera known, is composed of animals whose body is so much flattened, that there is scarcely an interval between the tegumenta of the upper and lower surfaces, so that it is difficult to see how the carn are there lodged. This lamellar body is divided into three distinct parts: the head, the thorax, and the abdomen. The head has the form of a delicate disk or of an ordinary leaf, and only adheres to the thorax by its central portion, so that the borders all round are free. This species of buckler is wide and horizontal; at its anterior extremity it gives insertion to the eyes and to the antennae. The eyes spring near the median line, and are globular; they are carried on slender, cylindrical, and very long peduncles. The internal antennae spring equally from the border of the carapace, immediately outside the ocular peduncles; they are very small, and present a peduncle composed of three cylindrical joints and two terminal filaments. The second pair of antennae are much more expanded, and vary much in their form: sometimes they are very long, slender, cylindrical, and composed of many distinct joints; at other times they are short, lamellar, without apparent divisions, and seem to be the rudimentations of the carapace. The mouth is situated towards the middle or even towards the posterior third of the carapace, and is only composed of a labrum, a pair of mandibles, a lower lip, and a pair of jaws. The mandibles are large, rounded externally, and armed internally with two transverse and a tooth. The lower lip is large, very apparent, and deeply biolobated; the jaws are small, membranous, and each terminated by two lobes or blades directed inwards, and armed with some spines towards their summit. The appendages which represent the jaws of the second pair, and the first jaw-feet, are rudimentary, and do not enter into the composition of the buccal apparatus; they are thrown more or less far backwards, and fixed to the thoracic buckler like the feet. The jaws of the second pair are sometimes formed by a lamina or blade, which is sometimes rather large and oval, sometimes entirely rudimentary. A pair of tubercles, situated a little behind these last appendages, are the only vestiges of limbs, which otherwise are very rudimentary.

The thorax is lamellar like the carapace, and constitutes a second buckler, the anterior portion of which is only covered by the first of these foliaceous disks. It is in general thicker than the latter; it is divided into two or three transversal lamellae, which are placed side by side, and represent no trace of a division into rings. The feet are inserted all round the disk: the first pair are very small, and hidden under the carapace; they are slender, cylindrical, and unguiculated at the end; sometimes they are not furnished with appendages, and sometimes give origin from the extremity of their last joint to a flagelliform palp. The five or even six succeeding pairs are very long, and sufficiently similar to each other; like the first pair, they are cylindrical and rudimentary. Each of them is furnished with a cylindrical prolongation of the border of the great thoracic plate. Their first joint is very long, and carries, at its extremity a flagelliform palp, composed of a cylindrical joint, and of a multiauriculate stem furnished with numerous hairs. The succeeding joints of the principal branch of the feet present nothing remarkable, but are very easily detached, so that in general they are not found, and the feet appear to spring terminated by a ciliated appendage. In some feet end with four, or five, or even six feet, but among the last, while the four or five succeeding pairs are terminated by a rather strong nail; the last pair are sometimes similar to the preceding, sometimes rudimentary and without the flagelliform palp. When seen in the interior, the organs, are found small vesicular appendages, which seem to be the vestiges of the flagrum (or external branch) of those members. The disposition of the abdomen varies; sometimes it is elongated, divided into very distinct parts, and perfectly distinct from the thorax which covers its base; sometimes it is confounded with the buckler, and only seems to be a prolongation of it. In this last case it varies still, for it is very wide at the base, and occupies the whole space comprised between the posterior feet; whilst in other cases it is rudimentary and lodged at the bottom of the re-entering angle formed by the border of the thoracic plate. Six or seven rings can nearly always be distinguished, the preceding one is cut off by the prolongation of the succeeding segment, a more or less developed caudal fin. The number of the false feet fixed under the abdomen varies, and they are in general rudimentary. (M. Edwards.)

Nervous System and General Organization. The nervous system of the Phyllopora presents a remarkable mode of constitution; the mass formed by the cephalic ganglion is situated near the base of the antennae, and communicates by a medullated nerve with the thoracic ganglion very long cords. The thoracic ganglia are not united on the median line, but communicate with each other by transversal commissures: there are nine pairs. The abdominal ganglia are very small, and amount to six pairs. Each of these last is united by a pair of nerves to the special cerebelomandibular ganglion, which is to be perceived a great number of vessels which diverge laterally. M. Milne Edwards observes that they may belong to the
circulatory apparatus; but this opinion does not appear to M. Milne Edwards to be admissible, and he considers that this apparatus is the analogue of the liver. He acknowledges that he knows nothing of the organs of reproduction in these crustaceans, and adds, that their habits have not been studied.

Geographical Distribution of the Genus.—The seas of warm countries. M. Milne Edwards remarks, that were it not for the beautiful blue of their eyes, they would not be perceived as they float on the surface of the water, so transparent are their bodies. The seas of Africa and India, New Holland and New Guinea, furnish the greatest number of species. Phyllosoma Mediterranea appears to have been the only European species known, till Mr. F. C. Lukis noticed another of these remarkable crustaceans in the 8th volume of Loudon’s Magazine of Nat. Hist. The figure in Loudon is very correct, but Mr. Lukis has called our attention to a slight mistake in the position of the letters of indication. Letter 6 in the note at the foot is made to point to the ventral aspect, whereas it should indicate the dorsal, which in the description is assigned to letter 5: but this last letter, in the cut, indicates the ventral aspect. Since the publication in Loudon, Mr. Lukis has confirmed the presence of the species on the shores of the Atlantic by another specimen taken at Guernsey, and he proposes for it the name of Phyllosoma Sarmiense.

The species are very numerous, and exhibit differences in their organization so great, that M. Milne Edwards thinks it will be probably necessary hereafter to establish many generic divisions for these forms; but, as he cautiously and philosophically observes, until the modifications of structure dependent upon sex and age are known, the value of those differences cannot be well appreciated: he therefore thinks it preferable to take those differences only for the base of simple subgenera, and he divides the genus into the three following natural groups:—

1. Ordinary Phyllosomata.

Abdomen very distinct from the thorax, large, divided into rings, and terminated by a well-developed caudal fin.

The Phyllosoma of this division, in the opinion of M. Milne Edwards, approach, more than the others, the Caridoids and the Amphipods, for their abdomen, though flattened, much resembles that of the Shrimps (Salicoques). The cephalic bucker is oval and very much elongated. The external antennæ are setaceous, very long, in general divided into many joints and without a dilatation of an auricular form at their base. The two sides of the first pair of feet, which correspond to the jaw-feet of the second and third pair in the Decapods, carry a flatelliform palpus. The thoracic plate is nearly circular, and its lower part is narrow and but little or not at all notched. The posterior feet are rudimentary.

The abdomen is rather large, not much narrowed backwards, composed of very distinct rings, and is terminated by a caudal fin, the four lateral blades of which are nearly as long as the middle blade.

Example, Phyllosoma commune.

Description.—Cephalic plate less than the thoracic plate, covering the base of the second pair of feet (or external jaw-feet), elongated, and narrowed forwards. External antennæ styliform, much longer than the ocular peduncles, and composed of five joints (without reckoning the peduncle which supports them), and which is only a prolongation of the border of the carapace, of which the third is very small, the fourth shorter than the ocular peduncle, and the last nearly half the length of the preceding, and not convex.

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Mouth situated towards the posterior third of the carapace, and very near the jaws of the second pair, which have the form of large oval blades. Jaw-feet represented by a small ciliated appendage carried on a large tubercle. Anterior foot (or jaw-foot of the second pair) reaching beyond the mouth, and having at their base, as well as at the base of the succeeding feet, a small vesicle. Abdomen scarcely more than one-half as long as the thorax. Length about an inch.

Locality.—The seas of Africa and India.

Phyllosoma clavicornis, from the seas of Africa and Asia, is another example of this section.

Phyllosoma clavicornis.

The other two sections consist of those Phyllosoma whose abdomen is intimately united with the thorax, with well-distinguished divisions, and terminated by a very small caudal fin.

2. Short-tailed Phyllosomata.

Abdomen in general rudimentary and lodged in the middle of a great notch on the posterior border of the thorax.

In this group the abdomen presents nearly the same form as in the ordinary Phyllosoma, but is in general nearly rudimentary, and is always lodged in the middle of a re-entering angle formed by the posterior border of the thoracic plate; the false feet are ordinarily reduced to the state of vestiges, and the caudal fin is in general very incomplete. The conformation of the external antenna is equally characteristic; these appendages are shorter than the internal antennæ, and have the form of a blade without transversal divisions, which presents externally an articuliform prolongation or point, and which itself seems to be a simple prolongation of the border. The anterior jaw-feet are nearly always reduced to a state still more rudimentary than they are in the ordinary Phyllosoma, and the feet of the two first pair want the flagelliform palp.

Phyllosoma laticornis and Phyllosoma brevicornis, the eyes and antenna of which are represented below, are examples of this section.

Phyllosoma brevicornis.

1, eyes and antenna of Phyllosoma laicorns; 2, eyes and antenna of Phyllosoma brevicornis. The first of these species is found in the Indian seas, and the second in the seas of Africa and Asia.


Abdomen large, triangular, and occupying the whole length of the posterior border of the carapace.

The Phyllosoma of this division are remarkable for the great size of their carapace, and especially for the conformation of their abdomen, which is triangular, occupies the whole space comprised between the base of the posterior
feet, and continues with the thorax without interruption, so as to form with it a single plate. The external antennae are short, lamellar, and furnished externally with an articulated prolongation, as in the preceding section. The disposition of the external jaw-feet and of the anterior jaw-feet is the same as in the ordinary Phyllosoma, whilst the feet of the two first pairs want the fimbriiform palp, as in the Phyllosoma of the rutidistian. The fourth pair of the inferior feet are rudimentary. The abdomen is terminated by a fin consisting of five rather large blades, but the false feet of the preceding rings are rudimentary.

Phyllosoma spinosum (Assess.) and Phyllosoma Medi terraneum (Mediterranean), &c., are examples of this section.

Amphion. (M. Edwards.)

M. Milne Edwards states that the crustaceae which he has designated under the name of Alimte, are very closely allied to the Phyllosoma than any of the other Stomatopods, but in some respects they resemble also the genera Alimta and Mytis, and he is of opinion that they establish the natural passage between these animals. Their cephalic bucker or carapace is foliaceous, like that of the Phyllosoma, whilst the form of the abdomen and the caudal fin is that of Mytis.

The cephalic bucker is very much developed and entirely lamellar; it extends to the origin of the abdomen and hides the base of the feet; its longitudinal diameter is more than twice its transversal diameter, and on each side it is curved a little downwards; its anterior border is nearly straight, and its posterior border is oval, with the eyes. There is no trace of a rostrum, but on each side the angle formed by the union of this border with the lateral border is prolonged forwards after the fashion of a spine. The posterior border of the eye, which is sharply defined, is continued with the lateral borders without forming well marked angles. The eyes are very large; their terminal portion has the same form as that of the Phyllosoma, but the narrow stem which supports them, instead of being very long and slender as in the Phyllosoma, is rather short; the antennae are inserted on the same line, immediately below and behind the ocular peduncles. The first pair have the same general form as in the Phyllosoma; their basal ring is composed of the chelae which are elongated, the first and last of which are the longest, and they each terminate by two small filiform stems, the internal one very short, and the external one nearly of the length of the basal portion. The external antennae are much more developed, and do not at all resemble those of the Phyllosoma; they approximate much in their general form to those of the Alimta, but, instead of being directed downwards and outwards, they are straight and directed forwards. This antennae is not inserted directly externally, but gives insertion internally to a cylindrical stem, and externally to a great lamellar appendage; this lamina, which is nearly oval, goes much beyond the edge of the basal portion of the internal antennae, and anteriorly it is serrated, and its external border is terminated by a spine. The stem is composed of two small very short basal joints, and of a long terminal joint slightly convex towards the end; its length is almost double that of the lamina which covers its base.

The disposition of the mouth is nearly the same as in the Phyllosoma; it is very distant from the antennae, and forms towards the anterior third of the cephalic bucker a small rounded tubercle, from the posterior part of which issues the thorax springs. The parts which enter into its composition are a labrum, two mandibles, a tongulet (languette), two pairs of jaws, and two pairs of jaw-feet. The labrum is transversal and but little developed. The mandibles carry no palp, and are in great part hidden by the tongulet, which is bilobated. The jaws (first pair) are nearly rudimentary, and appeared to M. Milne Edwards to consist only of a small horny blade, the border of which is ciliated. The second pair are composed of two joints; the posterior of which presents internally a prolonged flattening with spines. The jaw-feet of the first and second pair, which in the Phyllosoma exist only in the state of vestiges and do not enter into the composition of the bucker, are, on the contrary, here very much developed and applied upon the jaws. Those of the first pair present within many tongs and bearded furnishes with hairs at their extremities, and on the external side a rather large with a large foliaceous and oval appendage. The jaw-feet of the second pair are much more developed than the preceding; their basal joint is lamellar, and carries on its anterior part, i.e., a cylindrical stem composed of three joints; 2nd, a fimbriiform appendage, or arm, which advances to the external side of the stem and reaches beyond it. The thorax is flattened, as in the Phyllosoma, but narrower, and completely hidden under the carapace: it gives attachment to the second and third pairs of legs. The third and fourth legs are rudimentary. The abdomen is divided into three sections; the middle is much shorter than the others; the second joint is terminated by a sharp spine. The third succeeding pairs of legs are long, all being furnished with appendages resembling those of the third joint one, two, or three spines, similar to that which exists at the extremity of the second joint. The fifth pair of feet, which are rather shorter than the fourth pair, present the same disposition; the last pair are much shorter than the preceding, and present no very distinct spines. The abdomen is nearly as long as the cephalo-thoracic portion of the body, and is composed of seven segments. Its form is the same as that of the abdomen of the Stomatopods, and the terminal segment is divided into two parts; the upper piece of which (formed by the seventh ring) is lanceolate, and the lateral pieces of which are oval. The appendages fixed under the first five rings of the abdomen are rudimentary.

The Phyllosoma spinosum lives in the Indian Ocean, or is found at sea in the Indian Ocean by M. Renaud, naval surgeon. Its length is about an inch, and its teguments, with the exception of those of the abdomen, are diaphanous. (Histoire Naturelle des Crustacés.)

PHYSALIS. (Physographe.)

PHYSANT. (PHYSOSTER. [WHALES].

PHYSICAL NUT, the colonial name of the nut of the Jatropha curcas, an East Indian plant, whose seeds are employed by the natives as a purgative. It is common on the coast of Coromandel, where it forms a small tree or bush, and is called Bagbiranda. The seeds are violently emetic and diuretic, in large doses very fatal; one seed is sufficient for a dose. The oil of the plant boiled with oxide of iron forms a varnish, used by the Chinese for covering boxes. (Lindley's Flora Medici, No. 375, p. 184.)

PHYSICIAN (6 primary), a word derived from primary, natural, which meant originally what we should now call a natural philosopher, or one of those persons who have for their object the investigation of nature and its laws, in opposition to iô̈skoí, or those who examine particularly and in detail the causes of phenomena. From the English, however, the word physician is used only to designate the professors of the healing art, called in Greek Iarpoi, and in Latin medici; while in most (if not all) other European languages the derivatives of the Greek word are still employed in their original sense, meaning, and are expressed either by some native word or by one derived from the Latin. The origin and progress of physic, together with an account of the different medical sects, has been given already under medicine; in the present article it is proposed to mention some of the most curious and interesting facts respecting the rank, education, &c., of the physicians of antiquity, and afterwards to state the legal qualifications for practising this branch of the medical profession in our own country.

In Greece and Asia Minor the profession of medicine seems to have been held in high esteem, for not to mention the apotheosis of Asclepius, who was considered as the father of it, there was a law at Athens that a female or slave should practise it (Hyginus, Fab. cap. 574); Asiatic mentions one of the laws of Zaleucus among the Epizephyrian Locrians, by which it was ordered that if any during his sickness should give medicine to a slave, or be unconscious, even if he should recover, he should be put to death for his disobedience (Var. Hist., lib. ii., cap. 37); and there are extant several medeces struck by the people of Smyrna in honour of different persons belonging to the medical profession.

Dissertatio de Smyrnatis in Medicorurn Honorum percutiis, 4to., Lond.,

* Somewhat analogous to this is the use of the Arabic word hikam (from himach, 'moust,' sắpes fīrāt), which probably means a wise or learned man in general, but is very frequently used in a restricted sense to signify a physician,
When the Decree of the Athenians (published among the letters of Hippocrates) be genuine, and if Socrates (in Vitæ Hippocr.) can be depended on, the same honours were conferred upon that physician as had before been given to Plato and the Archistratists, who continued the Eleusinian mysteries, and maintained in the Prytanæum at the state's expense. (See also Pliny, Hist. Nat., lib. vii., cap. 37.) Some idea of the income of a physician is given by Democedes, who owned four hundred and forty-four pounds; he afterwards received from the Athenians one hundred minae, i.e. (reckoning with Hussy, the Attic drachma to be worth 7½ drachma) rather more than four hundred and six pounds; and he was finally attracted to Samos by being offered by Polycrates a salary of two talents, i.e. (if the Attic standard be meant) four hundred and eighty-seven pounds, ten shillings. It should however be added that Valckenaer doubts the accuracy of this statement of Herodotus with respect to the Agætæans and Athenians (and apparently with reason), on the ground that the latter people, at the time of their greatest wealth, only allowed their ambassadors two drachmae (of Attic gold) per diem. (Ident. 66.) It seems to have been not uncommon in those times (as afterwards in the later Roman empire, see Archiætæ), for states to maintain physicians for the benefit of the sick, and to assign them sinecures, Memor. Soc., lib. iv., cap. 6, 8; Plat. Gorg., p. 233; Strabo, lib. i., p. 125; Dios., lib. xii., cap. 13; and these again had attendants, for the most part slaves, who exercised their calling among people of low condition. (Plato, De Leg., lib. ii., cap. 7, ed. Steph.; Boeckh's Public Economy of Athens, vol. ii., p. 160.)

In the earlier times of the Roman republican physicians were unknown (Pliny, Hist. Nat., lib. xxxix., cap. 5, ed. Tauc.), and for some time after the profession was in a great measure confined to persons of servile rank; for the richer families having slaves who were skilled in all sorts of trades, &c., generally possessed one or more that understood medicine and surgery. (Middleton's Essay De Medicinarum apud Romanos regimen Conditione, Cantab., 1726, 4to, and the various answers to it that appeared on its publication.) To this practice however there were many exceptions: e.g. the physician who was taken prisoner with Julius Cæsar by the island of Phæætus (Sueton, cap. 4), and who is called his friend by Plutarch (see Cassius's Note on Sueton.); Archagathos, who, being the first surgeon that settled at Rome, had a salary paid him by the state, and instead of being attacked with the Jus Quiritium, A.D. 553, n. 210 (Cassius Hœ-Jeff ap. Pliny, Hist. Nat., lib. xxxix., cap. 6; Arnobius, who is known to have been a physician (Cal. Aurei, De Morb. Anar., lib. ii., cap. 35). He passed the stage of Augustus (Plutarch, Vita Brutii, cap. 41, ed. Taucuhn, where however it should be noticed that some editions read Armeanus instead of Ἀρμανεύς); Asclapio, whom Ciceron calls his friend (Epist. ad Deiere, lib. xii., cap. 20); Asclepiades, the friend of theseus the orator (Cic. de Orat., lib. i., cap. 14); Eudemus, who is called by Tacitus (Annal., lib. iv., cap. 4) the friend and physician of Livia; and others. With respect to the income made by eminent physicians at the beginning of the empire which is generally assigned as the income of the publicans, see Hist. Nat., lib. xxxix., cap. 5; that Abutius, Arruntius, Calpetanus, Cassius, and Rubrius gained two hundred and fifty thousand sesterces per annum, i.e. (reckoning with Hussy the milenum summum (sestercitium) to be worth, before the reign of Augustus, 8½, 172, 1d.) about two thousand two hundred and thirteen pounds, ten shillings; that Quintus Sertorius made it a favour that he was content to receive from the emperor five hundred thousand sesterces (of which he had received hundreds and twenty-seven pounds), as he might have made six hundred thousand sesterces (or five thousand three hundred and twelve pounds, ten shillings) by his private practice; and that he and his son were allowed six thousand talents (i.e., for the two hundred and eighty years from the emperor Claudius, left between them at their death, notwithstanding the large sums that they had spent in beautifying the city of Naples, the sum of thirty millions of sesterces (or two hundred and sixty-five thousand six hundred and twenty-five pounds). Of the previous medical education necessary to qualify a physician for the legal practice of his profession in the early times, we know nothing; afterwards however this was under the superintendence of the state.

Among the Arabians the medical profession appears to have been held in high esteem. Many of their chief physicians were Jews or Christians, and some apostatised to the Mohammedan faith. The Arabic profession seems to have been in a manner hereditary, as in that of Avenzoar (Ibn Zohir), five of whom successively belonged to it. (Reiske's Abu'Abdalla Anno Almosin, tom. iv., p. 669.) The qualifications necessary for practising medicine seem to have been rather slight, till the Caliph Murtada, A.D. 319 (A.D. 931), in consequence of an ignorant practi-

The first medical school that was established in Europe was that at Salernia (Salernitan Schola) towards the close of the seventh century; the second was probably that at Montpelier, founded about a hundred years afterwards. Their course of medical education is unknown, but they were generally instructed in anatomy, physiology, and the personal aspects of disease, and taught to study the ancient works; they were also taught the art of preserving the principles of health, and, in consequence of their profession, to have a sanguine disposition. They were allowed to have a trade, and to be held by the public to be the equals of other professors. The medical schools of the thirteenth century were more highly respected, and the medical profession was raised to a higher point. The first medical school that was established in Europe was that at Salernia (Salernitan Schola) towards the close of the seventh century; the second was probably that at Montpelier, founded about a hundred years afterwards. Their course of medical education is unknown, but they were generally instructed in anatomy, physiology, and the personal aspects of disease, and taught to study the ancient works; they were also taught the art of preserving the principles of health, and, in consequence of their profession, to have a sanguine disposition. They were allowed to have a trade, and to be held by the public to be the equals of other professors. The medical schools of the thirteenth century were more highly respected, and the medical profession was raised to a higher point.
In the fourteenth year of the same reign, 1522, another act was passed, by which the examination of physicians was taken from the persons appointed for that purpose by the Queen and was reposed in the hands of the college instituted by a charter of that king. [PHYSICIANS, COLLEGE OR]. Under this the university graduates who might desire to practise in London were included, as well as the other physicians; and since that time the legislature has seldom interfered on the subject.

With respect to the present state of the profession, the first class of medical practitioners in rank and legal precedence is that of the physicians. They are (by statute 37 Henry VIII) allowed to practise physic in all its branches, among which surgery is enumerated. The law therefore permits them both to prescribe and compound their medicines, and to perform operations in surgery as well as stagnant and putrid diseases.

The regulation of this profession is also provided for by the statutes and charters relating to the surgeons and the apothecaries. [SURGEON.] Yet custom has more decidedly distinguished the classes of the profession, and assigned to each its peculiar avocations. The practice of the physician is universally understood, as well by their college as the public, to be properly confined to the prescribing of medicines, which are to be compounded by the apothecaries; and in so far superintending the proceedings of those and their operations in prescribing, is necessary to the general health of the patient, and for the purpose of counteracting any internal disease. It would be impossible to enumerate here the legal qualifications required for the several departments. It appears, therefore, to be sufficient to mention those recognised in the British dominions.

In the university of Oxford, for the degree of Bachelor of Medicine, it is necessary that the candidate should have been at least twenty-one years from the day of matriculation; that he should have gone through the two examinations required for the degree of bachelor of arts; that he should have spent at least three years in the study of medicine; and that he should have been examined by the Regius Professor of medicine and two other examiners of the degree of M.D. in the theory and practice of medicine, anatomy, physiology, and pathology; in materia medica, as well as chemistry and botany, so far as they illustrate the science of medicine; and in two at least of the following anciant medical writers, viz. Hippocrates, Celsus, Aretaeus, and Galen. After taking the degree of Bachelor of Medicine, the latter licensed to practice is delivered to the candidate, under the common seal of the university:—

'‘Cancellarius, Magistri, et Scholares Universitatis Oxoniensis diitico nobis in Christo, —— Baccalaurio in Medicina, & Cognatione in una Universitatis predictam, saltem Domicin semetipsum ad nostrum medicum, praecepto et omnium necessarium studia, consilia, et actiones ad Dei gloriam et fratum salutem referre debent; cumque Medicin de hac, inter reliquis facultates, plurimum conferat; hinc est, quod nos Cancellarius, Magistri, et Scholares antiquorum (pro eis quoque, quos de scientia suae, vitaeque ad morum integritate, habebus) liberamus tibi, tenore presentium, concedimus potestatem et facultatem practicandi in Medicina, et omnia facienda, quae ad eam spectant faustulatum, ulivis per universum Angliae regnum, in perpetuum duraturn.


'In quorum omnium majestatum fidelium et plenius testimoniun sigillum, Universitatis Oxoniensis commune, quo hanc in parte ultimam, presentibus appo facimus. Datum in Domino nostro Congregatione (Gloriam dei mensis — aucti Domini millesimo octingentesimo — ).'

For the degree of Doctor of Medicine, the candidate is required to have completed forty terms from the day of matriculation; if not received in the college a dissertation on some subject, to be approved by the Regius Professor, to whom a copy of it is afterwards to be presented. 

At Cambridge a student, before he can proceed to the degree of Bachelor of Medicine, must have resided six years, have resided nine terms, and have passed the previous examination: the necessary certificates, &c. are much the same as those required at Oxford. A Doctor of Medicine must be of five years' standing from the degree of M.B. Since the university of London has been chartered, in 1837, the degrees of Bachelor and Doctor of Medicine, among others, have been conferred there. Some temporary regulations have been drawn up, which are to continue in force until 1842; after that time there appear to be the necessary qualifications for medical degrees.

For the degree of Bachelor of Medicine.—Candidates to have been engaged for four years in professional study at one or more of the recognised institutions, one year at least to be spent at some of the University of the United Kingdom. They have also to pass two examinations, at the first of which they must produce certificates of having completed the nineteenth year; of having taken the degree of Bachelor in medicine; of having attended a course of lectures on descriptive and surgical anatomy, general anatomy and physiology, comparative anatomy, pathological anatomy, chemistry, botany, materia medica and pharmacy, general pathology, general therapeutics, forensic medicine, hygiene, surgery, midwifery, surgery, medicine; of having dissected during nine months; of having attended a course of practical chemistry; and of having attended practical surgery. Candidates to be examined in anatomy, physiology, chemistry, descriptive and physiological botany, materia medica, and pharmacy.

To the second examination no candidate can be admitted until two years after passing the first. He must produce certificates of having passed his first examination; or having successfully attended a course of lectures on each of two of the four subjects mentioned above; of having subsequently to his first examination dissected for six months; of having conducted at least six labours; of having attended the surgical practice of a recognised hospital or hospitals during twelve months, and lectures on clinical surgery; of having attended the medical practice of a recognised hospital or hospitals during other twelve months, and lectures on clinical medicine; of having subsequently attended to practical medicine in a recognised hospital, infirmary, or dispensary, during six months. The candidate must also produce a certificate of moral character from a teacher in the last school at which he has studied. Candidates to be examined in physiology (including comparative anatomy), general pathology, general therapeutics, hygiene, surgery, medicine, midwifery, and forensic medicine.

For the degree of M.D.—Candidates to produce certificates: 1, of having been awarded the degree of Bachelor in Medicine in this university, or a degree in medicine or surgery at a university recognised by this university; 2, of having subsequently attended (A) to clinical or practical medicine at a recognised hospital or hospital in this country, or (B) to clinical or practical medicine during one year in a recognised hospital or medical institution, and of having been engaged during three years in the practice of his profession; (C) or if he have taken the degree of B.M. in this university, of having been engaged during five years in the practice of his profession; 3, of moral character, signed by two persons of responsibility.

Candidates who have not taken a degree in arts, or passed the matriculation examination in medicine, will be required to translate a portion of Celsus De Re Medic.

Regulations relating to Practitioners in Medicine or Surgery desirous of obtaining degrees in Medicine.

Degree of Bachelor of Medicine.—Candidates shall be admitted to the two examinations for the degree of Bachelor of Medicine on producing certificates: 1, of having been admitted, prior to the year 1840, members of one of the legally constituted bodies in the United Kingdom for licensing practitioners in medicine or surgery; 2, of having resided at least three years in a recognised medical school, or as required by the charter of the ancient universities, 3, of moral character, signed by two persons of responsibility.

Degree of Doctor of Medicine.—Candidates who have been engaged during five years in the practice of their profession, shall be admitted to the degree on producing certificates: 1, of having been engaged...
during five years in the practice of their profession; 2. of having taken the degree of Bachelor of Medicine in this university.

In Scotland the degree of doctor of medicine is conferred by the universities of Edinburgh, Glasgow, Aberdeen, and St. Andrews; and of the best learned physicians such a degree can still be obtained without residence; the regulations at the others contain nothing particularly worthy of notice.

In Ireland, the King and Queen's College of Physicians exercised much the same jurisdiction, as the English college. The degrees of Bachelor and Doctor of Medicine conferred by Trinity College, Dublin, rank in the same degree respectively from Oxford and Cambridge, and are never given without previous residence of four years. For the degrees of M. D. five years must have elapsed since the degree of M. B. was conferred; the candidate is then to undergo a second examination, and write and publish a Latin thesis on some medical subject.

By the English law the physician is exempted from serving on juries, from serving various offices, and from bearing arms. He is (according to Willcock, p. 105) responsible for want of skill or attention, and is liable to make compensation in pecuniary damages (as far as such can be deemed a compensation) to any of his patients who may have suffered injury by any gross want of professional knowledge on his part.

The same idea of the amount of fees paid to physicians in the middle ages may be gained by what we are told of Petrus de Abano, one of the most eminent physicians of the thirteenth century. For visiting a patient out of his own city he charged one hundred and fifty francs (or about six pounds sterling) and, what is not for the worse, he went for the whole of his honorarium IV., he demanded four hundred ducats per day, or about seventy pounds. (Bayle's Dict., art. 'Apopne.') It should however be noticed that these charges were considered very enormous.

In England physicians were frequently rewarded by the grant of church livings, prebendaries, and deaneries; and the names of some are preserved who were made bishops. At the end of the sixteenth century the physician is honorary and that it cannot be recovered by an action at law; and that every person professing to act as a physician is precluded from assuming a different character, as that of a surgeon or apothecary, for the purpose of recovering his fees, although he may in fact be a surgeon or apothecary, or a person who had no right to practice as a physician. It has likewise been determined that a custom in the defendant's neighbourhood to pay physicians at a certain rate for their attendance and services, after it has become publicly understood that he expects a larger fee; inasmuch as the party applying to him must be taken to have employed him with a knowledge of this circumstance.

Physicians, Royal College of, the principal chartered medical body in England, was founded through the instrumentality of Linacre, who, obtained by his interest with Cardinal Wolsey, letters patent from Henry VIII., dated in the year 1516. This charter granted to John Chambre, Thomas Linacre, Ferdinand de Victoria, Nicholas Halsewell, John Francis, and Robert Yaxley, that they, and all men of the same faculty of and in the city of Lon-

The licentiates of the college who may practise within the precincts of London and seven miles round it are (until 1836) of three orders, viz. Fellows, Candidates, and Licentiates. The last of these classes, generally de-

denominated licentiates, are those who have only a licence to practise physic within the precincts above described. The second class was abolished in 1836. The first class are those that have a licence, bearing the name of the king, for themselves to give it the royal assent. No statute has been at any time passed in pursuance of this purpose; and it is very doubtful how far and in what manner the charters have been accepted by the college, though they have, cer-

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practise in any profession or business in which he is competent, the effect of 14 Henry VIII., must be taken to be this, viz. it has left to every man his common law right of practising in the profession of physic, as in any other profession, if competent, and has appointed the following orders to regulate the profession.

The mode of examination is wholly in the discretion of the college, which has confided the immediate direction of it to the censors. It has however also appointed that the doors of the college shall be open to all fellows who may think proper to be present, and that they may take part in the examination, should they think fit; and that the fellows may have an opportunity of availing themselves of this right, it is declared that all examinations shall be held at a court held at certain regular intervals. (Ibid., p. 41.)

The order of Candidates was abolished in 1836, as above stated, but there were reserved to students then in the universities of Oxford and Cambridge their knockouts rights.

The order of Fellows comprises those who are admitted into the fellowship, community, commonality, or society of the college. The charter incorporated all physicians then legally practising in London, so that each of them who thought proper to accept it became suo facto a member or fellow; but as all future practitioners, within the precincts and seven miles round that city, were required to obtain a list of the college, there was soon arisen a sort of order among the profession. The fellows attempted by various bye-laws to limit their own number, but seem to have considered the licentiates as members of the college, or the commons, and themselves as forming a select body for the profession. To this state of things the statute 32 Henry VIII. seems to allude in speaking of the "commons and fellows." The charter of Charles II. expressly notices these orders as forming the body of the society, in which all students who have practiced the profession should be elected from among the commons of the society. (Ibid., p. 44.)

The following is a short account of the bye-laws of the college respecting the election of Fellows.—It was at first in 1555, that no person should be admitted into the college until he had practised for some time under a probationary licence, which time was afterwards limited to four years. This was perfectly reasonable and consistent, as affording a proper opportunity of making the candidate and his qualifications and title to precedence known to his electors. About the same time were established the three classes of fellows, candidates, and licentiates. In 1637, it was provided, that nobody should be admitted a fellow until he had performed all his exercises and dispositions in one of the "British universities," without dispensation; and in 1637, that none should be admitted into the society of the college who should not have been a doctor or candidate of physic seven years, or who have publicly read physic for three years in some "university of Britain," or been doctor of the chair in some university of this kingdom, or ordinary king's physician. In 1751, under the pretence of explaining the words "any British university," in some of the former bye-laws, it was declared that no person should be admitted who was not a doctor of physic of Oxford or Cambridge. Another alteration was introduced in 1765, by excluding all except such candidates, and the king's or queen's ordinary physician with salary, and the regius professors of physic of Oxford and Cambridge: and in or soon after the year 1769, it was declared that no person should be admitted to the order of Fellows, who had not obtained a degree of physic in the university of Oxford or Cambridge, or, having obtained that degree in the university of Dublin, had been incorporated into the university of Oxford or Cambridge; and until he had been examined as to his knowledge of physic at three of the greater or lesser meetings of the college: and that no person might be admitted a fellow unless he had been a candidate for a year, except that the president might, in any of the following ways, propose as licentiate minora one licentiate of ten years' standing; and if the greater part of the comititia minora should consent, propose him at the next comititia majora to be elected a fellow; and if the greater part of the fellows then present should consent, then licentiate might be admitted a fellow; and that any of the fellows might propose a licentiate of seven years' standing, and of the age of thirty-six years in the comititia majora to be examined; and, if the greater part of the fellows should consent, the licentiate might be examined by the president, or vice-president, and censors; and if approved by the greater part of the fellows then present, he might be proposed to the next comitia majora to be a fellow, and admitted, should the majority of fellows then present consent. (Ibid., p. 46.)

These bye-laws are considered in law invalid, and are directly contrary to the original charter. The statute rendered all men of the faculty of and in London eligible to the fellowship, or to the title of doctor of and in London are not eligible, but those only who have been of the order of candidates for one year; and none can become candidates who are not graduates of Oxford or Cambridge. This is partly in the latest statute: it is the imposition of a qualification not required by the constitution; and (what is most fatal to such a qualification) one which does not depend upon the body imposing it, or any select portion of that body, but on two universities, in legal acceptance strangers to the constitution, and usually overlooked by the statute by which it was established. (Ibid., p. 49.)

It would be impossible here to give an account of all the literary controversies in which the College of Physicians have been continually engaged, partly in support of their own just and undoubted rights, and partly in defence of their arbitrary and unwise limitations with respect to the election of fellows. A list of the titles of more than fifty pamphlets, &c., written on this subject between the years 1665 and 1810, is given in a work entitled "An Exposition of the State of the Medical Profession in the British Dominions; and of the Injuries of the Medical Manufactory, especially in the British Universities, and of the Practice of Strangers in London," 8vo., Lond., 1826, pp. 373. After much dispute and discussion, these obnoxious bye-laws have lately been repealed, and the following regulations have been published by authority of the college:

Regulations of the Royal College of Physicians of London.

The College of Physicians, having for some years past found it necessary, from time to time, to make alterations in the terms on which it would admit candidates to examination, and license them to practise as physicians, has strangers believe that neither the character nor object of those alterations, nor even the extent of the powers with which it is invested, has been fully and properly understood.

The college therefore considers it right at this time to make public a statement in the manner in which it possesses within itself, of conferring the rank and privileges of physician on all those who, having had the advantage of a liberal education, both general and professional, can prove their qualifications by producing proper testimonials and submitting to adequate examinations.

Regulations regarding Certificates and Testimonials.

Every candidate for a diploma in medicine, upon presenting himself for examination, shall produce satisfactory evidence, 1. of unimpeached moral character; 2. of having completed the twenty-sixth year of his age; and, 3. of having devoted himself for five years, at least, to the study of medicine.

The course of study thus ordered by the college comprises:

Anatomy and physiology, the theory and practice of physic, forensic medicine, chemistry, materia medica and botany, with the practice of midwifery and surgery.

With regard to practical medicine, the college considers it essential that each candidate shall have diligently attended, for three entire years, the physicians' practice of some general hospital in Great Britain or Ireland, containing at least one hundred beds, or having a regular establishment of physicians as well as surgeons.

Candidates who have been educated abroad will be required to show that, in addition to the full course of study described above, they have sufficiently attended the physicians' practice in some general hospital in this country for at least twelve months.

Candidates who have already been engaged in practice, and have attained the age of forty years, but have not completed the prescribed number of years of study, may be admitted to examination upon presenting to the censors' board such testimonials of character, general and professional, as shall be satisfactory to the college.
The first examination is in anatomy and physiology, and is understood to comprise a knowledge of such propositions in any of the physical sciences as have reference to the structure and functions of the human body. The second examination includes all that relates to the causes and symptoms of diseases, and whatever portions of the collateral sciences may appear to belong to these subjects.

The third examination relates to the treatment of diseases, including a scientific knowledge of all the means used for that purpose.

The three examinations are held at separate meetings of the governing body, but as it is desirable to carry on in Latin, except when the board deems it expedient to put questions in English, and permits answers to be returned in the same language.

The college is desirous that all those who receive its diploma should have a knowledge of the Latin language, and they are required that it be of a liberal education; at the commencement therefore of each oral examination, the candidate is called on to translate a book into Latin. The subject is a passage from Hippocrates, Galen, or Aretæus; or, if he be an Englishman, it is required to be translated into English a portion of the works of Celsus, or Sydenham, or some other Latin medical author.

In connection with the oral examinations, the candidate is called on to explain a passage in the pharmacopoeia, in English to questions on the different subjects enumerated above, and to translate in writing passages from Greek or Latin books relating to medicine.

Those who are approved at all these examinations will receive the following diplomas under the common seal of the college:

Sciæ anatomiae, nom. a. b. præsidium collegi medicorum Londinënsium, unum consensu sociorum ejusdem, auctoritate nobis a domino rei publicæ et parliamenti commissis, examinavit et approbavit omnium virum, T. S. et e concensu librarum facultatem et licentiam, tam docendæ quam examinandæ scientiæ at etem medicam, idemque summa honores et titulæ atque privilegia, quæqueque hic vel alibi medicis concedi solent, in absentia nostra limites frui dedisse. In cujus rei fidem et testimonium, adjectis censores et registrarii chartis, sigillum nostrum commune presentibus apoji fecimus, datis ex multis collegii die annos quattuor

Domini millesimo octingentesimo

The college gives no particular rules as to the details of previous education, or the places where it is to be obtained. It is to be observed that the character and extent of the study above described, the manner in which the examinations are conducted, and the mature age of the candidates, as affording full time for acquiring the necessary knowledge, that there will be accorded to the student the privilege of those who have had a liberal and learned education can embrace, with the slightest hope of success, to offer themselves for approval to the examiners, and to the college by their own efforts, that they may promise itself the satisfaction of thus continuing to admit into the order of English physicians a body of men who shall do it honour by their qualifications, both general and professional, and who shall be of such a character as to address the same appeal, all who have obtained its diploma, whether they have graduated elsewhere or not.

In drawing up and promulgating the above regulations, the college has endeavoured fairly to look at that which is submitted to it, and that it is consistent with the ends of education, in all that concerns the qualifications of its members; it has resolved to estimate all testimonies, whether they are presented under the name of certificates, diplomas, or degrees, strictly according to their value, and to measure them by this standard alone, as parts of the previous qualifications of candidates, which they are to verify in their examinations.

The college feels confident that it has overstepped neither the spirit nor letter of the laws which have invested it with the power of governing and legislating for the whole faculty of medicine within its jurisdiction, by thus earnestly endeavouring to maintain its character and reputation, and vindicate its claim to be the source of professional honour.

Dec. 22, 1838.

FRANCIS HAWKINS, Registrar.

Much curious and entertaining information respecting the antiquities of the College of Physicians is to be found in 'The Headed Cane,' an amusing and interesting little volume by the late Dr. Macmichael. He tells us (p. 120) that its very first meetings immediately after its establishment, 1618, were held in the garret of Linacre's house, Stock House, No. 3, Knight Rider Street, which still belongs to the college. About the time of the accession of Charles I. the college removed to another spot, and took a house of the title of Dr. Wister's, on the side of Clement's Inn, condemned, as part of the property of the church, and sold by public auction; on which occasion, Dr. Hamey became the purchaser, and two years afterwards, 1649, gave them in perpetuity to his colleagues. The great fire of London, 1666, consumed the college, and the whole of the library with the exception of one hundred and twelve folio volumes. For the next few years, the meetings of the fellows were generally held at the house of the president, while a new college was being built on a piece of ground that had been bought in Warwick Lane. This was completed in four years, and was opened, without any particular ceremony, on the 26th of February, 1674, under the presidency of Sir John L'Estrange. The new building was the meeting place of the college until 1677, when an elegant Latin oration was delivered by the president, Sir Henry Halford.

PHYSICS. The word physis (φυσις), or science of nature, might include in one general term all that is called mixed mathematics, natural philosophy, chemistry, and natural history. The title of physician, or student of nature, has become in our language synonymous with one who investigates the origin of diseases and the means of preventing and curing them; but in the Continental languages it still has the more general signification. Also physio (the study of nature) has come to mean the drugs given to cure disorders, or medicines; and it would be difficult to name two more complete departures from etymology.

The plural physics is always used to mean the study of nature by means of the severer modes of investigation. Some apply it to the application of mathematics to material phenomena, and to this alone; others, distinguishing the preceding as mathematical physics, include under the general term the sciences of experiment. There is no usage in which any degree approaches a universal reception; we prefer the second-mentioned signification.

The art of determining the mental character of an individual by the examination of his countenance. The popular ideas of the indications afforded by different kinds of features, by the adoption of which every one is at times a prophet of physiognomy, are nearly as definite as the few principles on which those who have made it an object of peculiar study have established. The circumstance on which the chief and most evident indications afforded by the countenance depend, is, that when certain feelings and habits are much indulged in, the positions of the features which are associated with them are apt to become permanent, either by the formation of wrinkles or other marks in the skin, or by the enlargement and disproportionate strength of the muscles chiefly exerted. Thus a person in the frequent habit of sneering contemptuously acquires at last a slight curve in his upper lip by the disproportionate size and power of its elevator muscle; he who obstinately has the wrinkles of the skin, and a laughter on his face, he has his cheeks commonly associated with deep thought, permanently fixed; he who has his attention constantly alive to the objects around him acquires an expression of vivacity in the open features of his eye, and the wrinkles of all the muscles of his face; while he, on the other hand, whose thoughts are rarely roused to active efforts, acquires a smoothness of feature and a sluggishness of action in the general parts of the face, which indicate that its muscles have been exercised as rarely and with as little energy as his thoughts.

The peculiarities of feature thus acquired are often transmitted from the parent to the child; and in the latter, their
indications will be correct or false according as there has or has not been a coincident transmission of the parent's disposition. Or a child may acquire a peculiar expression of countenance by imitating those among whom it is placed, and in this case also it will only be by accidental coincidence that the indications of the features are correct. From these and other sources of fallacy, the attempts to raise physiognomy into a science have not been so successful as to encourage a deeper study of it than every one unconsciously engages in during his intercourse with the world.

PHYSIOLOGY (ὑποθήκη, from φύσις, nature, and λέγω, discourse) is the science which treats of the phenomena of living bodies. Its several departments are considered in separate articles, in which a complete system may be found in those on Life, Digestion, Absorption, Circulation (Heart), Respiration, Nutrition, Secretion (Gland), Brain, Skeleton, Articulation, Muscle, Larynx, Nerve, Brain, the several organs of the Senses, Embrjyo, Ovum, and the articles on the anatomy and special physiology of the individual organs of animals and plants, which are referred to in each of the preceding.

PHYSOGYRADA, a family of marine animals, arranged by M. de Blainville, in his synoptic table, under the Zoophytes, but as one of the aberrant or false forms of that class, and as animals improperly referred to them. They agree according to M. de Blainville, have a regular, symmetrical, bilateral, contractile, fleshy body, often very long, provided with a complete intestinal canal, with a more or less considerable aërial dilatation; there are a mouth and anus, each of them terminal, and anomalous branching in the form of very long, very contractile cirri, intermingled with the ovaries.

M. de Blainville remarks that the animals which constitute this group are so anomalous at first sight—they seem to recede so much from known types, that it is difficult to form anything like a satisfactory idea concerning them. Zoologists therefore who have followed the natural method, were obliged, in placing them among the radiated animals, to make of them a particular section, under the name of anomalous or irregular Radiata; and in truth very anomalous Radiata they were, having nothing about them of a radiated disposition of structure.

Another reason which contributes to the difficulty of following out the relations of the Physogyrada, is the rarity of finding them in an unmutilated state, and above all because it is almost impossible to preserve them in collections, so frail and delicate is their structure. Even when consigned to the spirit in a perfect state, they become so changed from contraction, that their natural form and structure are scarcely to be recognised.

M. de Blainville further observes that he had long entertained grave doubts as to the place assigned to those animals in the zoological scale, founded solely on external form, which, according to his principles, is sufficient to determine the degree of organization of an animal; but he had not succeeded in elucidating them completely up to the time when MM. Quoy and Gaimard submitted to his observation many specimens of the common Physisutus, and M. Hérisier de Gerville sent him an individual tolerably perfect, freshly preserved in spirit of wine. Since then M. de Blainville has had opportunities of observing some specimens of Physopsoro and Stephanonima, also communicated to him by MM. Quoy and Gaimard; so that he thinks he is able to withdraw all these animals from the type of the Actinozoa, to form a distinct order of them under the type of Malacoza. Nevertheless, he observes, the Stephanonima may not belong to the same family as the Physopsoro properly so called.

The authors, says M. de Blainville, in continuation, who have spoken of the animals that constitute this order, are rather numerous; but only a small number of those authors have examined them, and that incompletely. The Physali were first observed, and from the time of Browne, who first figured them, down to M. Lesueur, who published some of them in the Atlas, illustrating the voyage round the world by Captain Duperrey, there are few voyagers who have not noticed them. Forskæl seems to have known the Physisutus best; but these have been least observed. The Stephanonima were discovered by Péron and Lesueur; but the individuals from which they characterised the genera were incomplete. The work of MM. Quoy and Gaimard on the Physisutus was addressed to the Academy of Sciences at Paris, during their last voyage in the Astrolabe, commanded by Captain d'Urville.

It is by the aid of these different works, and especially from the means generously afforded to M. de Blainville by MM. Quoy and Gaimard that he has produced the arrangement which we proceed to lay before our readers. (Actinology, 1834.)

But before we enter upon the divisions and subdivisions it will be necessary to apprise the reader that very great obscurity still veils much of the organization of these animals, that part of it especially which relates to the propagation of the species. It is now well known, through the labours of some distinguished continental zoologists, that several of the Medusæ, probably all, are dioecious (Polikograda); but the generation of the group before us is not yet satisfactorily made out; at least after some research we cannot find that it is. We now turn to M. de Blainville's arrangement.

* * *

Nataatory organ simple and lamellar.

Physalis.

Generic Character.—Body oval, rather elongated, more narrow and proboscidiform anteriorly, by platalum in the pedicle, attenuated and obtuse posteriorly, mouth star-shaped and terminal; anus lateral; a foot in form of a crest or oblique lamina, directed from before backwards; branchial very anomalous, and composed of a great number of divergent cirrious productions; organs of generation terminating at the anterior third of the right side by two closely approximated orifices. (De Blainville.)

As to the molluscan relationship and the organs of generation—quiere.

Example, Physalus Artiñus.

This is the Arctius of Browne; Medusa Caravella of Müller and Escholtz; Physalus pelagicus of Lamarck; the Portuguese man-of-war of English voyagers. When the crest is expanded it has been very probably mistaken for Argonauta Argo, the Paper Nautilus, by those who have declared that they have seen fleets of the latter sailing. This Physalus is an inhabitant of the warm seas, but a shoal of them are sometimes driven into our bays, particularly on the south-west coast. When we were in about 45° of
northern latitude,' says Sloane, in his 'Voyage to Jamaica,'

'I first saw what the seamen call a Caravel, or Portuguese
man-of-war, which seems to be a zoophyllum, or of a middle
nature between a plant and an animal; it is of that kind of the
soft fishes called Urticae, from their stinging quality, and
to me seems different from any described by any natural
historian. I shall call it Urtica marina, solata, purpurea,
oblunga, cirrhis longissima; and he figures it with the
crest or lamina expanded as 'A. carveli,' plate ill., fig. 5.

* * *

Locomotive organs complex and vesicular.

Physophora.

Generic Character.—Body more or less elongated, cylind-
droid, hydoriform in its anterior part, provided below with
two series of vesicular diversiform bodies, with a regular
aperture, and behind with a variable number of very diverse
eirrhiform productions, two of which are longer and more
complex than others; mouth at the extremity of the hyda-
tiform part; anus terminal; organ of generation? (De Blainville.)

Example, Physophora Muzonema.

M. de Blainville states that the Physophorae differ from the
Physa in swimming or floating in a vertical position, the
aeriferous pouch being above and the eirrhiform produ-
ctions below. The distinction of the species appears to
him to depend especially on the number and form of the
natatory organs.

Diphysa.

Generic Character.—Body cylindrical, elongated, con-
tractile, muscular, composed of three parts, the anterior
part vesicular, the middle part bearing on its lower part two
hollow natatory organs, placed one before the other, and the
third part (which is the longest) provided above with a
fibrolo-capillaceous plate, and below with eirrhiform pro-
ductions; mouth terminal; anus? (De Blainville.)

Example, Diphysa singularis (Quoy and Gaimard;
Astrolabe, Zoologie).

Rhizophysa.

Generic Character.—Body free, transparent, very con-
tractile, very much elongated, swollen at one extremity into
a sort of aeriferous bladder with a terminal orifice, provided
throughout its length with scattered tentaculiform pro-
ductions mingled with eirrhiform filaments. (De Blain-
ville.)

This genus is divided by M. de Blainville into two
sections.

1. Species with simple tentaculiform productions. Na-
tatory organs hollow. (Genus Rhizophysa.)

Example, Rhizophysa planostoma, Peron; (Rhizophysa
Peroni, Esch., Aculeph., p. 148, No. ii., l. 13, fig. 3).

2. Species whose tentaculiform productions are covered with
eirrhiform filaments. Natatory organs unknown. (Genus
Ephphula, Esch.)

Example, Rhizophysa filiformis (Physophora filiformis,
Forsk.), represented above.

1. Rhizophysa filiformis; 2. Physophora Muzonema.

P. C., No. 1120.
Species provided with two sorts of locomotive organs, the anterior ones hollow, the posterior solid.

Apolenia.

**Generic Character.**—Body very much elongated, cylindrical, vermiform, provided anteriorly with many hollow natatory organs in two rows, and behind with solid squamous organs, between which come forth tentaculiform cirrhi, furnished with vermiform suckers.

Example, Apolenia Urania.

**Stephanomia.**

**Generic Character.**—Body in general very much elongated, cylindrical, vermiform, covered throughout its extent, except in the lower median line, with squamous natatory organs, full and dispersed in transverse bands, between which come forth, and especially inferiorly, long, very much diversified cirriform productions, mingled with the ovaries. Orifices of the intestinal canal terminal. (De Blainville.)

Example, Stephanomia Amphitridae, Péron et Lesueur (Voyage aux Terres Austr., p. 45, pl. 29, fig. 5).

Protomedea

**Generic Character.**—Body free, floating, cylindrical, filiform, very long, provided above with an imbricated assemblage of gelatinous bodies (on two alternate rows) which are full and hippocodiform, and throughout the rest of its length with filamentous, cirriform, diversiform productions. Mouth proboscidiform, at the extremity of a sort of vesicular stomach.

Example, Protomedea lutesa.

**Rhodophyza Helianthus.**

**PHYTOLACCA.** [PHYIOSCRODA.]

**PHYTOCRINUS.** [ENCIRNITES, vol. ix., p. 391.]

**PHYTOLACCA, a genus of tropical or subtropical herbaceous plants, with erect or occasionally twining stems, a thickish turpentine-shaped root, alternate undivided broad leaves, and leafless erect racemes of flowers succeeded by deep purple fruits. They have a five-parted calyx, no corolla, from five to thirty stamens inserted into a fleshy disk, and the pistil consists of several unilocular distinct carpels united at the base or along the whole inner angle. The fruit is an umbonate depressed berry, with solitary seeds whose embryo is turned round mealy albumen. **Phytolacca decandra**, a species found wild in Virginia, where it is called Poke, whence the vulgar name of Poke applied to this species, has a root which acts as a powerful emetic, but its exhibition is attended with narcotic effects: its berries are also reported to possess the same quality; they stain an intense purple colour, and are said to be employed in Portugal as a means of improving the appearance of inferior red wines. Notwithstanding the acidity of its leaves, this plant, when very young, is said to be eaten in the United States as apersian; and Dr. Ryle relates that he found P. acinosa, a Himalayan species, employed in the same manner in the north of India, to be very palatable when boiled.

2 1 3 4 5

**Phytolacca decandra.**

1, an expanded flower; 2, the pistil; 3, a ripe fruit; 4, the same, cut through transversely; 5, a vertical section of a seed.

**PHYTOPLACCA/CÆÆ** form a small natural order of
plants, named after the subject of our last article, but whose limits and position in a natural series are unsettled. According to most writers they are regarded as apetalous plants and allies of the Chenopodaceae and Polygonaceae, and are of considerable interest from various points of the botanist's hand to that of the gardener, and on the other to the Malvaceous orders. Notwithstanding the apparent difference between these two stations, it is probable that both are correct, and that Phytolaccaea are really plants connecting Chenopodaceae and Cynophyllaceae. If so, they furnish a new proof of the fundamental divisions proposed for Exogens by both De Candolle and Jussieu. With the exception of Phytolacca, no plants of this order appear to be of much importance to man; their products are insipid.

PHYTOSAURUS, Jager's name for a genus of fossil saurians. Two species are recorded, Phyphosaurus Cubicodon, and Ph. CYCLICODON, both from the dolomitic sandstone (Jager formation). PHYTOSILICA. [MUSOPHAGIDAE, vol. xvi. p. 28.]

PHYTOTOMA. [MUSOPHAGIDAE, vol. xvi. p. 28.]

PHYTOTOMII. [MUSOPHAGIDAE, vol. xvi. p. 28.]

PHYTOZOARIA. This is the general term employed by M. Ehrenberg to include the numerous species and genera of Phylloparasites, among which the older writers the titles of Infusoria and Microzoaria are preferred. There are two grand divisions, or classes as Ehrenberg calls them, of the Phytotomia, viz. Polyastroica and Rotatoria or Rotiferia; and as, judging from some examination in our pocket-books, we may believe that some of these classes to be really and widely distinct, so as to deserve to be placed in very different parts of the scale of animal organization, we treat the subject under those terms respectively Infusoria; Microzoaria; Polyastroica; Rotatoria.

PHYZIELA, one of the divisions of the Terebellides of Saviny (Amphitrite, Cuv., part. Annelide Tribuloce of Cuvier). PIA MATER. [BRAIN.]

PIACENZA (Flacotia), a town in the duchy of Parma, and the second in importance in that state, is situated about half a mile from the southern bank of the Po, and two miles east of the confluence of the Trebbia with that river, in a fine plain bounded on the south by well cultivated hills. The town is surrounded by walls and ditches, and has a citadel, which, according to a stipulation of the Congress of Vienna in 1715, is garrisoned by Austrian troops. The streets are wide and all are pave with large square stones. In the front of the ducal palace is adorned with two equestrian bronze statues of duked Ranuccio and Alessandro Farinace. Piacenza abounds in fine buildings, the principal of which are the Palazzo del Duce, built by Philip II; but, for the moment of the two provinces of Vignola, but not finished; 2, the Podestaria, or town-house, a gothic building of the thirteenth century; 3, the cathedral, a handsome Gothic structure of the twelfth century, with fresco paintings by Gherardo and Luigi Caracci; 4, S. Sisto, a handsome church, richly adorned; 5, the fine church of S. Agustino; 6, Santa Maria di Campagna, which belongs to the Franciscan friars, has some fine paintings. The town library contains 30,000 volumes; the new theatre, and the school of design and architecture, are also worthy of notice. Piacenza contains 25,000 inhabitants, who carry on a considerable trade in the agricultural products of the country, and who are often sought by the German of the treasury, for the support of a superior school, or lyceum, with professors of law and medicine; a secondary or grammar school, the college Alberoni for boarders, a school of the fine arts, an institution for the education of young ladies, and several elementary schools for boys and girls. Piacenza is first mentioned as being a Roman colony, settled at the same time as Cremona, in the country conquered from the Gauls, in the year 224 a.C. (Liv. Epit., xi.), and of the council of Puntul in the province of a superior school, or lyceum, with professors of law and medicine; a secondary or grammar school, the college Alberoni for boarders, a school of the fine arts, an institution for the education of young ladies, and several elementary schools for boys and girls. Piacenza is first mentioned as being a Roman colony, settled at the same time as Cremona, in the country conquered from the Gauls, in the year 224 a.C. (Liv. Epit., xi.), and of the council of Puntul in the province of
brass pin wire, which was placed vertically at a point where it could be struck or pressed against its proper string. The right-hand division of which was free to vibrate, whilst the left-hand was muffled by a piece of cloth, the object of which was to damp or stop the string, which it did the instant the hammer struck it. The touch of the clavichord was peculiar, partaking of both the harpsichord and the organ; in other words, both struck and pressed, and the pressure could be so varied as to produce a kind of trubulent effect. The tones were feeble, soft, and melancholy, and better suited to the student, the composer, or the solitary, than any purposes of social amusement.

This rude idea of a piano-forte continued in use for many years, and the first improvement upon it was introduced by Longman and Broderip, who brought out a patented invention having two additional parts in the action, namely, the hopper and the under-hammer, as they were called (see fig. 3). This patent was followed by another introduced by Clementi and Co., the burden of which simply was an improvement on the damper. It was called the Irish patent, from its having been the invention of an Irishman of the name of Southwell; but it had simplicity only to recommend it, was found inconvenient, and shortly afterwards was superseded by what is now called the crank damper. We cannot give the name of the inventor of this improvement; it became so instantly generally, that the inventor was lost sight of in the crowd of makers who adopted his invention. It is still in use, and is acknowledged to be a good and sufficient plan. The damper used by Messrs. Broadwood previously to the introduction of the crank damper was made in brass (see fig. 2), but by whom invented we do not know. We need not here come to the last addition which has been made to the action of the square piano-forte, the check. This member was borrowed from the grand piano-forte, and is so acknowledged by the name given to those square pianofortes which have it; for they are always called, or excelled, grand-square pianofortes. The check certainly is a most important part of a piano-forte, and the best of actions is nothing without it. The check is placed behind the hammer, nearly at the end of the key; when, after the blow has been given, it catches the tail of the hammer, and holds it till another blow is required (see fig. 3). For further information as to the square piano-forte, we refer to the diagrams, which we hope will be found sufficient for any information that may be required. As an instrument, we think less of the square piano-forte than any other; it has neither the touch, the tone, nor the appearance of either the grand or the upright.

The grand piano-forte, as above observed, was the invention of Schröder or Christofall, manufactured by Backers, and retains the shape of the instrument from which it was taken, the harpsichord. Here again we have two instruments alike in form, but unlike in almost every other circumstance; for their action, their tones, and the style in which they are played upon, are all entirely different. The action of the harpsichord was simply a key and what was called a jack, which was a piece of pear-tree with a small moveable tongue of holly, through which a cutting of crow-quill was passed to touch the string when the jack was in action; the tone produced by this contrivance was a kind of scratch with a sound at the end of it (see fig. 4).
The strings which are now used in piano-fortes are considerably larger than those which were formerly used; the advantages of which are durability and firmness. The steel-wire now in use is the manufacture of Mr. Webster of Pens, near Birmingham, and is greatly superior to the once-famed German wire, now no more in esteem with English manufacturers, from the bad quality of the metal and the very imperfect manner in which it was drawn; when perfectly round, which it ought always to be, it was generally too soft; and when sufficiently hard, it was scarcely ever well manufactured, from which circumstance it was constantly false in vibration. Stops and pedals are more or less adopted in different countries. Stops can scarcely be said to be used at the present day; they properly belong to the middle-age of piano-forte making, and were placed in the instrument on the left hand of the performer. The damper-stop and the buff-stop were the most common; the damper-stop raised the dampers from the strings, which gave continuation to the tones, and the buff-stop raised a piece of soft buffalo leather up to the strings, and gave the instrument somewhat the tone of the harp. Pedals are much esteemed by some performers and little by others; in foreign piano-fortes we find many pedals, but in the English we have scarcely ever more than two—one for piano effects, and the other for forte. This pedal, the forte, is an effective pedal, and not at all injurious to the mechanism of the instrument; we cannot say as much of the piano pedal. For, by passing the action to one string, it is not only straining to the centres of the hammers, but is also apt to disturb the tuning of the unions, by which an instrument is often unfairly tested as regards its standing, and a more frequent application to the tuner is required. In lieu of this pedal, some makers have introduced a soft substance, wool or leather, between the hammers and the strings, by which something like the buff-stop is accomplished, but with more delicacy and vibration in its effects. The foreign name for this pedal is _jeu celeste_, and to us it is more agreeable, and is certainly less injurious to the action of the instrument than the more frequent piano pedal.

We will here give, in alphabetical order, a few diagrams of grand actions. Their merits we must leave to those who have occasion for them, reserving only the right to make a few brief remarks that may be necessary for the purpose of this article. They are the works of living manufacturers.

Fig. 5. The Common Grand Piano-forte Action.

Fig. 6. Messrs. Broadwood's former and new Patent Grand Action. (Invented by Mr. Southwell, son of the late Mr. W. Southwell.)

Fig. 7. Messrs. Collard and Collard's new Patent Grand Piano-forte Action; the Invention of Mr. George Stewart.

Fig. 8. Mr. Errard's Patent Grand Action; the Invention of his Uncle, Mr. Sebastian Errard.

Fig. 9. Mr. Worsum's new Grand Action. (This Action is based on the Piccolo Action.)

Fig. 10. Mr. Zeiter's new Grand Action.

The upright piano-forte was, doubtless, taken from the upright harpsichord, and we have always understood that it was the invention of an Englishman of the name of Hancock, a musical instrument maker resident in some part of Westminster. He was a man of much ingenuity, and produced numerous varieties in his own instruments; amongst which we find the organised piano-forte, the portable grand piano-forte, and an instrument, also a piano-forte, in the shape of a spinet. The portable grand, in its day, was a successful and desirable instrument, but has been superseded by instruments of the kind called kit grands, boudoir grands, pocket grands, and semi grands. The next novelty was the invention of John Isaac Hawkins, who constructed an upright instrument with a...
detached sound-board in an iron frame, and the whole was so arranged as to be able to meet the atmosphere with compensating powers. In the bass, it had spiral or helical strings, by which length was gained; and, in the treble, three octaves of equal tension were accomplished by a uniform size of wire. It was patented, but did not take with the public sufficiently to come into notice. Following Hawkins we had William Southwell, who patented an improvement in upright piano-fortes, and gave it the name of the cabinet piano-forte. The name still remains amongst us, but the invention has long since been superseded and laid aside. The unique piano-forte was introduced about thirty years ago by Messrs. Wilkinson and Warrnorn, and was the invention and patent of the latter. This instrument met the taste of the day for instruments of little altitude; it did not stand higher than three feet three inches, and the strings were all placed diagonally towards the floor; the action was simple and effective, but it is not now under manufacture.

Fig. 11, Mr. Wornum's Patent Unique Action.

Numerous inventions and improvements appeared about this time, some of which were patented, and some not; but we cannot say more concerning them than that they were productions with scarcely a difference, and calculated merely to gratify their several makers with a variety of their own. For their powers and peculiarities were all much to the same effect under the finger of a performer; indeed we had no decidedly new thing until the double or Piccolo action appeared. This was the invention of Mr. Wornum, and patented by him some ten or twelve years ago; it is applicable to both upright and horizontal instruments, and is now extensively manufactured in Europe and America.

Fig. 12. Mr. Wornum's double or Piccolo Action.

For delicacy, promptness, and firmness of touch, it has not yet been equalled.

There are many things relating to the piano-forte which we have not touched upon. There are also some foreign ones to which we have not given especially those called down-striking actions: we have seen these, but are decidedly of opinion that they never will receive sufficient approbation to come into general use: they are much lumbered with parts, and all have a bad touch, and, in the effects and advantages of the actions are so delicate and so rapid, is alone enough to condemn them. Other inventions too, such as Mr. Litherland's patent helical springs to preserve the tuning, Mr. Riley's transposing instrument, Mr. Hopper, or Mr. Kirkman's transposing string, and Mr. John Trotter's alternated key-board, have all given place to other things, and are no longer known to the present generation of musical people. Mr. Litherland's plan of a well-balanced helical spring, which was to be attached to the loop of the string; thus, as the string contracted the spring gave way, or as it expanded the spring collapsed, by which the pitch of the string was retained and the tuning consequently preserved. It was never adopted to any great extent; but had its admirers: want of firmness in the tone was perhaps its greatest defect. Mr. Riley's plan for transposition was simply a double set of keys, one sliding under the other, by which music might be played from the same scale a note higher or lower.

It was purchased by Messrs. Broadwood, and is now laid aside. It never was calculated to be of service to the practice of music; neither did it introduce any new or valuable ideas to the mechanic. Mr. Mott's sostinente was an application of a caisson of air and silk loops to the pedal. The loops were attached to the strings, and the cylinder, which was moved by the foot, as it were bowed them, and the tones came forth somewhat like the tones of the sarpinnine. Under Mr. Mott's fingers, this device was capable of most pleasing effects, but without such aid, we never esteemed the invention. Mr. Kirkman's octave string, was applied as the third string of a grand piano; this string was an octave higher in pitch than the other two, and was somewhat in all in the manner of a grand piano, and a principal in the organ, but not so marked in character. It pleased for a time, but is now no more thought of. Mr. Trotter's alternated key-board was completed about fifteen years ago. Its peculiarity was that of alternating the keys: thus the octave came within seven white keys; the black keys too were passed under the white, and finished in front of them below by broad heads; by which arrangement a black key could be taken by either the thumb or the finger, at the option of the performer. His instrument was called by Mr. Trotter a transposing piano-forte; and he went so far as to promise a new notation for it, which notation he seemed to think would do away with the present altogether. That he did not live to see his promise fulfilled, but con- tainly double sharps and double flats, with all their accidentals, are anything but agreeable to those who cannot devote their whole lives to the study of music.

There is one other point to which we would draw attention, and that is what is called the bracing of piano-fortes. Our inquiries have led us to this subject, and we find that in flat instruments especially grand, there is a difficulty in giving strength to the brace. Some makers are for iron, and some for wood; but wood, it seems, to iron is therefore mostly adopted. That strength is important, and very important, is quite clear, when we know that the strings of a grand piano-forte pull equal to a weight of a ton. Iron as a substance, doubtless, has the greater strength, but may not wood be so applied as to be strong enough? That wood is more sonorous than iron, there has never, we believe, been a question, and we will yet hope that sooner or later it will be allowed to be a better material. The ingenuity and capital now employed in the interesting branch of manufacture give us some promise that the day is not far distant when a more uniform and successful practice will be adopted in the construction of the piano-forte. That this can be accomplished, what may not be expected from future Hummels and Thalbergs?
PIAZZA, Town of. [Sicily.]

PIAZZI, JOSEPH, was born at Ponte in the Valatile (Switzerland), July 16, 1746. His education appears to have commenced at Milan, where he assumed the habit of the Theatins, and became an inmate of the convent of St. Anthony. Here and at Turin he studied the classics and mathematics, and remained in both places in those parts of the town where, owing to the crowd and constant traffic, rain and dirt are most annoying to foot-passengers. Accordingly, in his plans for rebuilding the City after the Great Earthquake, Sir John Smeaton's Catalogue of 763 was adopted, as well as the fronts of the houses of the principal streets; but prejudice or something else determined otherwise; nor has such a highly convenient mode of building, as regards public accommodation, been since adopted in any of the improvements and new streets formed in the vicinity of New London Bridge.

PIAZZA, a term adopted in its original form from the Italian, but with a great change of its meaning: for while in that language it signifies merely an open place, it is employed by us to denote a covered amphitheatre, whether formed by columned arcades, in the low phases of its existence, but which term of course was already extended to the piazzas or public squares of Italian cities, as that of St. Mark's at Venice, &c. Yet, although we have borrowed the term, it has been rather as a distinct name applied in a few instances, amongst which alone excepting Inigo Jones's arcade, on the north and part of the east side of Covent Garden, which is expressly called the 'Piazza,' we have scarcely another instance in London, save a prominent to his position as king of Naples. [Ceres] Ferdinand would have commemorated the admiration among the astronomers of Europe a gold medal bearing the effigy of Piazzi; but the latter suggested that the money would be more usefully applied in the purchase of an equal instrument, by which the observatory was in need.

In 1817 he was called to Naples to put into activity the new observatory erected by Murat on the heights of Capo di Monte. He was succeeded in the observatory of Palermo by M. Cacciatore, to whom he had previously confined the difficult task of re-examining Maskelyne's thirty-six principal stars. The observations of Cacciatore, which were extended to 120 stars, form the basis of Piazzi's second catalogue. He became Professor Gauss. He was appointed to the post of professor in the University of Rome under lesueur and Jacquier, the editors of the Jesuits' edition of the 'Principia.' He began to teach philosophy at Genoa; but having expressed himself too openly on certain theological points, he was threatened with the persecution of the Dominicans, from which he escaped by accepting the professorship of mathematics in the new university of Malta, conferred upon him by the grand-master Pinto. Upon his return to Italy, he became professor of philosophy and mathematics of the Grand Noble from the pen of his friend Colonel Visconti, the present director of the geographers engineers at Naples. The published works of Piazzi mentioned in different numbers of the Journal, have been collected by him and translated into French by the Royal Society remark, in their seventh annual Report, that 'it exceeds everything of the kind which preceded it, and shows more powerfully than words can express what may be expected by the talents and assiduity of one individual.' Piazzi was a member of the principal scientific societies of Italy, France, and Germany. Of the Royal Society of London he was elected a fellow in 1804, at the same time with Sir John Herschel. He was appointed in 1803, in the capacity of aPremium to the observatory of Palermo, and a liberal annuity in perpetuity, to be appropriated in succession to the education and maintenance of young men who evince a marked partiality for astronomical science.

The preceding notice is chiefly drawn from an article in the 'Bulletin des Sciences' for 1826, drawn up by De Angiò under the eye of the Baron Zach. A more detailed account of Piazzi's life and labours has long been expected from the pen of his friend Colonel Visconti, the present director of the geographers engineers at Naples. The published works of Piazzi mentioned in different numbers of the Journal, have been collected by him and translated into French by the Royal Society remark, in their seventh annual Report, that 'it exceeds everything of the kind which preceded it, and shows more powerfully than words can express what may be expected by the talents and assiduity of one individual.' Piazzi was a member of the principal scientific societies of Italy, France, and Germany. Of the Royal Society of London he was elected a fellow in 1804, at the same time with Sir John Herschel. He was appointed in 1803, in the capacity of aPremium to the observatory of Palermo, and a liberal annuity in perpetuity, to be appropriated in succession to the education and maintenance of young men who evince a marked partiality for astronomical science.

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Picard was born on 21st July, 1620, at La Flèche in the present department of the Sarthe, and became priest, and prior of Rillé in the same department. Scarcely anything is known of his early history. Even the names of his parents appear to have been forgotten, as they are not mentioned by Lalande, who visited his birth-place. Pezenas, in his 'Critical History of the Discovery of the Longitude,' referred to by Delambre, speaks of one Picard, a gardener of the environs of Nîmes, whom the astronomer had instructed so successfully in the use of astronomical instruments, that he became one of the most celebrated observers of his age. As the subject of this article is the only Picard who is known to have acquired any celebrity as an astronomical observer, it may be conjectured that he was the humble individual here alluded to. The earliest event with which his name is associated, and of which the date is recorded, is the solar eclipse of 25th August, 1645, which he observed at the astronomer Gassendi, whom he succeeded, in 1655, as professor of astronomy in the College Royal of France. He was one of the eight individuals selected by Colbert, in 1666, to originate the Academy of Sciences. The account of his work made by his disciple and the year of his death, 1679, are the only information of his career available, but of those which can be seen the outline is seldom distinctly defined, while in some cases, as in the fixed stars, they have an apparent magnitude which they do not really possess. According to Lalande however the merit of this great improvement (which was eagerly adopted by every astronomer of note, Hevelius excepted) is divided between Picard and Auzout, who were in partnership, though, from Picard's description of his invention, in his work of 1672, he appears to have been solely responsible for it. His performance of this instrument, called the Transit Instrument, is described as follows: "This method, observes Delambre, who is adhered to at the present time, 'insures to those two authors, Huyghens and Picard, an incontestable superiority over all others of the same period, and over all others of the time of invention.' In the memoir wherein these views are more fully developed, and which he read before the Academy of Sciences, in April, 1670, he urges the necessity of forming more correctly the positions of the fixed stars and fixed stars of the constellations," which he regarded as the chief foundation of all sound practical astronomy. For this purpose he solicited the erection of a mural quadrant, which after many years of needless delay was finally adjusted in the plane of the meridian, not however till Picard was upon his death-bed. In 1671, with a view to give astronomers greater confidence in employing the observations of Tycho Brahe, Picard visited the island of Hoénie in order to determine the position of that astronomer's meridian. After two years of observation, he was able sufficiently however to enable him to detect an error of one minute in the latitude and several minutes in the longitude, as given by Tycho, which confirmed the suspicions previously entertained by astronomers. While absent on this occasion he met with Lomein, then a young man, with whose mathematical talents he was so well pleased that he brought him to Paris and introduced him to the academy. The observatory of Paris, the plan of which had been furnished by Picard, was completed in 1672. The situation was occupied by Dominique Cassini, who, at Picard's recommendation, had been invited by Colbert to take up his residence in France. It was not till two years later that inferior accommodation was the subject of complaint alluded to by Picard. 'He saw,' says Delambre, 'all his projects neglected or their execution deferred; all expenditure and encouragement lavished upon objects of less utility, though to the eye of the vulgar a more brilliant character, such as the rotation of the three planets, and the four new satellites of Saturn; while telescopes of great cost were imported from Italy to verify these discoveries, which, though certainly very curious, were and always will be useless.' The astronomical works of Picard were published by his son-in-law, Lalande, with Picard's recommendations, and was continued by him till his death. The same year he was nominated with Lalande, by the king, to conduct certain surveys along the coast of Gascony, in which he was the first to suggest the usefulness of constructing an entirely new map of the country. For this purpose he proposed the extension of the arc of the meridian passing through the Paris observatory as far as the extremities of the kingdom: a proposal which has since been carried into effect. As an observer, he was no less industrious and accurate than, as a philosopher, he was enlightened. His observations from 1666 to 1682, collected and published by Lémontier in 1741, under the title of the Astronomical Observations of the Astronomer Le Vau, do not require the statement of constructing an entirely new map of the country. Which, from causes then unknown, are continually taking place in the altitude of the polar star, is equally conclusive as to his zeal and the perfection which astronomical observation attained in his hand.

What Picard is however now chiefly remembered for, is his measurement of an arc of the meridian of Paris between Amiens and Alençon. This was begun in 1669, and continued for about five years. When the work was completed the Academy of Sciences, with which Picard was associated, purchased the land in order to make the necessary buildings. In 1671, a large folio of 30 pages. The base extended along a paved road from Villejuif to Juvigny; it was twice measured, the results being 56625 and 56634 toises, or yards, as the French term it. His perseverance in observing for ten years in observing the minute variations which, from causes then unknown, are continually taking place in the altitude of the polar star, is equally conclusive as to his zeal and the perfection which astronomical observation attained in his hand.
differs from Picard's by 17 toises (35½ English feet); and, thus rectified, this measurement is one of those on which the greatest reliance is now placed. The care with which the whole of Picard's operations were conducted, and the super-

iority of his instruments and methods over those employed in any previous survey, naturally produced considerable confidence in his result. Astronomers would not indeed have been justified bad they regarded the results of former surveys in any other light than rough approximations which enabled them to place the true dimensions of the earth would one day be found, but which were useless in determining what its dimensions and figure really were. Newton, in 1686, failed to establish the truth of the whole of Picard's from the meridian between London and York, which took place in 1633, gave results which have since been shown to be correct, and were doubtless known to Newton. But his measurement differed too considerably from those which preceded it to be admitted on the strength of the imperfect apparatus employed by him. Norwood's measurement is considered by Delambre a great piece of good fortune. [Norwood.]

Picard died at Paris, 12th July, 1682 (Delambre); ac-

cording to other authorities, his death took place in 1683 or 1684 (Amat). Picard's meteorological results, though they are inserted in the 'Memoirs' of the Academy of Sciences, the numbers refer to the volume:—

vi. De la Pratique des Grands Cadans par le Calcul: De Mesures des Zones de la Verole, de De Principe Aquarum Effusionum; Fragments auf Dieoptries; Treatise on Levelling. All but the last are in the 'Divers Ouvrages,' &c., fol., Paris, 1693.

vii. Measurement of the Earth; Astronomical Observa-
tions made in Denmark; Astronomical Observations made in various parts of France (4 papers).

x. Immersion and Emission of Jupiter's Satellites ob-
served at Paris in 1668; Observation of the Lunar Eclipses of 1718, 1725, 1731, 1737, 1744, 1751, 1757, and 1763.

Picard, and Roemer (2 papers); Experiments relative to the Phenomenon observed in the Vacuum of the Barometer; Oscillation of the Moon, observed by Cassini, Picard, Roemer, and De la Hire. [Delambre, Astronomie Moderne, and Biographie Universelle; Lalande, Biographie Astronomique; Condorcet, Eloge de Picard; Fontenelle's Eloge de Picard; Montucla, Histoire du Matérier qu'he was born, at Paris, in 1620. His first paper was an elaborate reconquest on the city of Cambrai, at the outset by the advice and instructions of his friend Andraios, the author of 'Les Etourdis,' and several other popular pieces) was 'Le Budinage Dangereux,' which was founded on the way in which data were displayed with such novelty in their subject, or in their style, that the public were not averse to be entertained here; a brief notice of the changes to which it has been subject will be found under the departments into which it is now divided. [Pas de Calais; Somme.]

Thus Picard was conducted to the provinces of the Lower, Haute or Upper Picardie (in which Picard Meridionale was included), comprehended the districts of (1) Amièniss (chief town Amiens (population 45,001); (2) Santeer, chief town Périnom (population 39,965); (3) Beauvaisis, chief town St. Quentin (population 17,956); and (4) Théracien, chief town Guise (population 30,724). The districts of Picardie Meridionale are above mentioned. Amièniss, Beauvaisis, and Soissons pres-

erved respectively the designations of the six old nations by which they were inhabited; the Ambiens, the Ver-

omandis, the Bellovaci, and the Susessionis. Haute or Lower Picardie comprehended the three districts of Le Calaisis, Le Bouliomais, and the county of Ponthieu, of which the capitals were respectively Calais (population 10,437), Boulogne (population 20,856), and Abbeville (population 19,162); Le Calais was sometimes designated Le Pays de Calais; Ponthieu was sometimes called the county of Ponthieu, chief town Ponthieu; the county of Montreuil, chief town Abbeville; the county of Montreuil, chief town Montreuil (population 4083); the district of Marquentuer, chief town Quené-Jennes; and the districts of Vieuxm, chief town St. Valery-sur-Somme (population 3975). A small part of the eastern extremity of Picardie is included in the department of Aisne.

The population given above is that of the communes, from the census of 1831.

PICI'OIN, NICOLAO, was born at Bari in the Neapolitan dominions, in 1728. His father, a musician, intended him for the church, but the predilection of the son for his pa-

rent's profession was too strong to be overcome, and at the age of fourteen he entered as a pupil in the Conservatorio di S. Onofrio, where he completed his studies under Leo and Durante. The first marked proof of his genius for com-

position was evinced in his serious opera Zenobia, produced at the Teatro S. Filippo, of Bari, in 1745. In the same year he vited to Rome, where he brought out Alessandro nell'Indie, which was eminently successful. Four years after appeared, in the same city, his comic opera, La buona Rigulida, the drama by the second of which he was, and ever will be, considered as Piccini's master-

piece, and be admired for the originality, the beauty, and the appropriateness of its aim, as well as for the judicious manner in which the accompaniments are disposed of in it. As well as those of a later age. It saved the manager of the Teatro delle Dame at Rome from
ruin, and excised a degree of enthusiasm amounting to extravagance: dresses, wines, may buildings, took the name of the principal character in the piece, La Cecchina; and during several years the fireworks on the roof of the theatre, the festivity of the city exhibited scenes from the opera, which was the favourite of all ranks. This was given in London in 1766, with an effect but little less than it had produced at Rome. Next year saw his Olimpia, in which is placed the橡岛, a caved doctor. He novel was applied to from all quarters in Italy to furnish the various theatres with operas, and he composed many, most of which were very successful, though now forgotten, a circumstance which he attributes to the length of his pieces. It is confirmed by the Gingenaut that in the short space of a few years he had produced one hundred and thirty-four operas, besides a vast number of masses, cantatas, and detached pieces.

Piccini received a pension to go to Paris, arrived there in 1776, and prepared himself to compose for the Académie Royale de Musique. Its first difficulty was an utter ignorance of the French language; but Marmontel, by becoming his instructor, soon removed this impediment. He next had to contend against national prejudices, and very formidable rivals, namely Gluck, and afterwards Sacchini. For some account of the musical feuds in Paris to which his visit gave rise, we must refer to our readers of the earlier and more formidable of these dramas — by which he introduced himself to a Parisian audience, met with every possible success, and though it led to a furious war among the connoisseurs as well as amateurs of all degrees, the composer, in addition to the honour of being elected to the French capital, and chosen as director of L'École de Chant, having previously been appointed singing-master to the queen.

The Revolution drove Piccini back to Naples, after losing nearly all his property. By his own sovereign, and having carried with him to his native country political opinions not like to be pleasing to the ears of an absolute monarch, and which he had the imprudence to mention them, he was disgraced, proscribed, and placed under the surveillance of the police. In 1798 he contrived to return to Paris, where his friends obtained for him a pension of 5000 francs, besides a gratuity of 2400 more from the society Des Encouragements Littéraires, with the addition of apartments in the Hôtel d'Angiviller. His various anxieties however brought on a paralysis afflicting, from which he recovered, and was received with kindness by the First Consul, who appointed him inspector of the Conservatory of Music. But shortly after, oppressed by domestic afflictions, he experienced a return of his former attack, under which he finally sunk in 1800, and was interred at Passy, where a handsome tomb is erected to his memory.

PICCOLOMINI FAMILY. [Pius II.]

PICCOLOMINI, ALEXANDER, born at Siena in 1568, died 1578. He was titular archbishop of Patras, and converser of his native city of Siena. His works of his life are particularly worth regarding, but the wide extent of his writings, and the esteem in which they were held by his contemporaries and immediate successors, make his name remarkable. He was moreover of an original turn, and his writings are almost all in Italian, so that he is among the earliest of those who endeavoured to raise the character of vernacular literature, by treating all branches of knowledge in modern tongues. His commentaries on Aristotle were prized for their good sense and for their abandonment of most of the scholasticisms which have since procured for that philosophy an undeservedly bad reputation. He advocated (in 1578) the reformation of the Calendar, which was afterwards adopted. In his book on the fixed stars and the sphere, he adopts the mode of designating the stars by letters; a small matter, but one which makes the greater part of the immortality of Bayer, and to which Piccolomini establishes his prior claim. His works are of a most gnostic character—astrology, physics, comedies, sonnets, morals, divinity, and commentaries on Aristotle. De Thou speaks in strong terms of the rare union of diversity and depth which his acquirements presented.

PEC'NUM. [Marco D'Ancona.]

PICHEGRU, CHARLES, a general of the French republic, was born of humble parents, in 1761, at Arbola in Franche-Comté. He enlisted as a common soldier, and accompanied his regiment to America. On his return he was promoted to be serjeant-major. He embraced the principles of the revolution, and in 1793 commanded the army of the Rhine. In the following year (1794) he succeeded General Hochs in the command of the Rhineland, and his second elevation was the repulse of an army, and was within the winter-quarters, they were masters of the whole country to the line of the river Wail, excepting Nimeguen, the isle of Bommel, and Bruda. The winter proved exceedingly severe, it snowed incessantly (as the ice of the Rhine was in a very hard condition, Pichegru made a simultaneous and completely successful attack on the above places, and crossed the Wall in January, 1795. The English were obliged to embark, the prince of Orange abandoned his army, and recommendation was made to make his escape to England, and nothing remained for the French but to take possession of the entire country. The plan of the early part of the campaign is said to have been traced out by Carnot, but Pichegru deserves the reputation that he gained by the energy and foresight he displayed in this winter campaign. On his return to Paris, he was appointed general of the army of Paris during the insurrection of the Lavoisiers in 1795, and by the influence ever afterwards exerted by his presence inspired the troops, he mainly contributed to restore tranquillity. He then joined the army of the Rhine, where he entered into correspondence with the prince of Condé, with a view of restoring the Bourbons to the throne. The three years, under the command of Moreau, in 1796. The embassy to Sweden was offered to him and declined, and he retired to Jura, for which department he was elected in 1797. Thiers says: 'he was a man of much tact and was too prudent to conceive any project of counter-revolution at this time; but he received the royalists' money, and gave in return plenty of promises.' He was sent to the National Convention, where he was elected president of the seals, and being detected in a conspiracy to overthrow the republican party, he was arrested September 4, 1797, sent to the Temple, and, with Barthelemy, Wilot, and several more, immediately transported to Cayenne. After eight months, he made his escape to England, where he was received as a partisan of the Bourbons. In 1804, Pichegru and Georges Cadoudal were employed with several of the Vendean leaders to organise a plot to overthrow the government of the First Consul. Being discovered just in the police, Pichegru, and being detected in a conspiracy to overthrow the republican party, he was arrested at Paris on the 17th February, and sent to the Temple. While a plot was being conducted against him, he was found, on the morning of the 6th April, 1804, strangulated in his cell. It was said that he was implicated in a murder on Bonaparte, but there do not seem to be grounds sufficient to establish this charge. (Thiers, Histor. de la Révolution; Biog. Universelle.)

PICIDIA, or FRYDEBECKERS.

PICO. [Azores.]

PICO, GIOVANNI DELLA MIRANDOLA, born in 1453, was the son of Giovanni Francesco Pico, count and sovereign of the little state of Mirandola and Comodoro, which now forms part of the Modenese territory. [Modena, Decchio- or.] He was a precocious youth, and gifted with a prodigious memory; he studied almost every branch of learning which was then taught, philosophy, law, philology, general literature, and poetry. He learned Latin, Greek, Hebrew, Chaldaic, and Arabic. With regard to philosophy, he followed the Platonist, or rather the Neo-Platonic, or Alexandria school. He travelled through France and Italy, and often delighted his audience with discourses of several kinds. He was pleased to argue on both sides of a question, and he thus acquired a wonderful reputation for learning. When twenty-three years of age he went to Rome, where he drew up nine hundred propositions on all kinds of subjects, logic, ethics, physics, metaphysics, theology, mathematics, astrology, and the cabala, inviting all the learned of Europe to argue with him upon each and all of them. This challenge was accepted in some instances, in which he is said to have come off victorious. But this display of learning was without danger, especially in that age. Out of the 900 propositions, 13 were picked out by officious persons which savoured of heresy, or incredulity, or something of the kind, and were submitted to the Inquisition; several others a strict inquiry upon so grave a subject. Pico wrote his defence, which was drawn up with great diversity, and in
which he professed his submissive orthodoxy. In conclusion the pope condemned the propositions, but acquitted the author of any heretical intention. One of these propositions referred to the eternity of punishments in the next world. Pico maintained that sin, being finite, could not be subject to an infinite penalty, but he afterwards modified his proposition by saying that "sin includes two offences, one the gratification of the senses, and Hereditary sin, or thither, the contempt of the grace of God and eternal happiness, which are infinite, and therefore may on the second account deserve an infinite punishment."

At last Pico, having no residence, being attracted thither by the renown of Lorenzo de' Medici and his friends. (Machiavelli, Stor. Florent. vi.) He there disputed and wrote upon the Platonic philosophy, which he strove to reconcile with the scriptures. He also wrote a work against astrology, in 12 books, which is perhaps the best of his writings, and likewise a dissertation on ancient mythology, and a commentary on the book of Genesis. His works have long since been forgotten. He died at Florence, in November, 1494, at the age of thirty-two, on the very day that Charles VIII. of France entered that city. His nephew Gian Francesco Pico wrote his biography.

PICROLITE, a mineral which occurs massive, with a thin fibrous or radiated structure, is Colour lead or yellowish green. Fracture splintery. Hardness 3-5 to 4. Opalescent, or translucent on the edges. Lustre slight, but somewhat pearly. Before the blowpipe it colours borax green, the colour disappearing on cooling. This mineral is common at Tägberg and Nordmarken in Sweden, traversing beds of magnetic iron-ore. It is stated also to have occurred at Reichenstein in Silesia. Analysis by Klaproth:

<table>
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<tr>
<td>Silicon</td>
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<td>38.80</td>
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<td>Protosyle of iron</td>
<td>8.25</td>
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<tr>
<td>Water</td>
<td>9.08</td>
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<tr>
<td></td>
<td>100.90</td>
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PICROSINE, a mineral which occurs crystallized and also massive.

Primary form a right rhombo prism. Fracture indistinct, uneven. Hardness 2-5 to 3. Nearly opaque. Lustre dull; vitreous. Colour greenish white, or sometimes dark green or even blackish. Streak white and dull. Specific gravity 2.98 to 3.06.

Before the blowpipe it gives out water, but does not melt; it becomes black, and then white and opaque, and acquires a hardness = 5.

Massive Variety—Structure thin, fibrous; fracture splintery; grain to compact.

Found in the iron-mine of Engleburg near Preunis in Bohemia. According to Magnus, it consists of:

<table>
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<tr>
<th>Substance</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silicon</td>
<td>64.69</td>
</tr>
<tr>
<td>Magnesia</td>
<td>33.34</td>
</tr>
<tr>
<td>Protosyle of iron</td>
<td>1.39</td>
</tr>
<tr>
<td>Protosyle of manganese</td>
<td>0.42</td>
</tr>
<tr>
<td>Water</td>
<td>7.30</td>
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<tr>
<td></td>
<td>97.33</td>
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PICROTOXIN, the principle to which cocculus indicus owes its deleterious properties. It is extracted by the action of water and alcohol, and eventually crystallized.

The properties of picROTOXIN are, that its crystals are usually acicular, but sometimes filamentosous, in plates and in hard granular crystals. It is intensely bitter, is soluble in 150 times its weight of water, and 15 times when boiled. Alcohol of specific gravity 0.810 dissolves one-third of its weight, and sulphuric ether of the specific gravity of 0.7 takes up two-fifths of its weight; in oil it does not dissolve.

It does not act upon test papers, thus evincing the properties neither of an acid nor an alkali, though it was once supposed to possess those of the latter. The acids do not appear to increase its solubility in water, and the alkalies and the bodies do not. The body, however, is precipitated from them by the addition of acids.

According to Pellerier and Courbes, it consists of—

<table>
<thead>
<tr>
<th>Substance</th>
<th>Quantity</th>
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<tbody>
<tr>
<td>Hydrogen</td>
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</tr>
<tr>
<td>Oxygen</td>
<td>60.91</td>
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<tr>
<td>Carbon</td>
<td>33.09</td>
</tr>
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<td>100.0</td>
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PICTOR, FABIUS. [FABIUS PICTOR].

PICTS, an ancient people of North Britain, whose origin and history are singularly obscure, and have furnished matter for endless speculation and conjecture. It does not occur in the enumeration of the British tribes given by Ptolemy in the beginning of the second century; nor are the Picts noticed by his successors Dion Cassius, or Frontinus, or Eutroclus, or the historian Pinkerton; but it is certainly at least in the highest degree improbable that they should have been passed over by Ptolemy if they were here in his time. The earliest mention of them is the fragmentary verses addressed by the rhetorician Eumenius to the emperor Constantius Chlorus, on his return from his victory over the usurper Allectus, in the year 296. [CONSTANTIUS I.]

Eumenius there speaks of the Britanni in the time of Julius Caesar (according to the reading of the passage as .Solis . . . Pictis modo et Hibernis assiuti hostibus—having been used only to the Picts and Irish as enemies. All however that we can infer from this expression is, that the same family of the Picts were familiar to the Romans as the屏蔽 a few hundred years before. This is the last time that the Picts are mentioned after the death of Constantius the Great, the son of Constantius, in 310, again mentions the Picts, and this time seems to use the word as the generic name for all the northern British tribes, and Dion Cassius, who died in 354, passes over the Picts with the usual term, &laquo;Paroram, silvius ut paludes,&raquo; is his words. This expression has principally led the majority of inquirers to the conclusion that the Caledoni (or Caledonians, as they are termed by the Romans) were really the north of the Picts. As Pinkerton, who himself adopts this opinion, observes, &ldquo;Buchanan, Camden, Lloyd, Innes, Whittaker, the Macphersons, O'Conor, D'Anville, though differing widely in other points, all join in giving the Picts the appellation of a mystical and legendary race of northern Britons.&rdquo; This, however, is an error, as the name is really a cognomen for all the barbarous tribes inhabiting the woods and marshes of North Britain.

After the time of Eumenius we have frequent mention of the Picts in the Roman writers. Ammianus Marcellinus, under the year 360, speaks of the invasion of the borders of the Roman provinces in Britain by those wild nations the Scots and Picts—&ldquo;Socratim Pictorumque gentem feratur.&rdquo; Again, in 364, he enumerates the &ldquo;Picti, Saxonexque, et Scotti, et Attaccoti,&rdquo; as harassing the Britanni with incessant attacks. &ldquo;We may just observe that the Scotti or Scotti mentioned in these two passages may not at present, are not yet inhabitant of any part of Britain any more than were the Saxones. But the most important passage in Marcellinus relating to the Picts, although it refers to another probably similar but less important event, occurs in his annals of the year 369, where he says that, in relating the actions of the emperor Constans (A.D. 357-361), he had already described as well as he could the situation of Britain, and therefore it is necessary to him only to observe that at that time &ldquo;Picti, in duas gentes divis, Diceladonas et Veturiones, idemque Attacoti, bellisimos hominum paexo, et Scotti per diversas vagantes, multa populabantur.&rdquo; As an FOURTH siècle, the Picts were understood to be divided into two tribes, the Diceladones, or Diceladones, and the Veturiones. These two names have however occasioned much perplexity. The Veturiones, indeed, are mentioned by the historian of Cirencester, whose work however is possibly nothing more than a modern forgery; but the name Diceladones occurs nowhere but in this passage of Marcellinus. It has been conjectured that the word was probably Duxcaladones, and with this emendation an
interpretation of both names has been given which is at least ingenious and plausible. The term *Caledonii* says a writer in *Coedalston*, men of the woods, modified by Roman pronunciation. The term *Deuculonii* is attended with no difficulty. *Duidalstonii* signifies, in the Gaelic language, the real or genuine inhabitants of the woods, which short signifies black, but pronounced long, signifies real, genuine; and in this acceptance the word is in common use: *Du Branach*, a genuine Irishman; *Du Albinach*, a genuine Albian. The appellation of *Deuculonii* was used to distinguish the inhabitants of the woody valleys of Albin, or Scotland, from those of the cleared country on the east coast of Albion, along its whole extent, to certain distances westward, in other parts of the island. These last were denominated, according to Latin pronunciation, *Vectoriones*; but in the mouths of the Gael, or native inhabitants, the appellation was pronounced *Uachtarich*. That a portion of this name served to give to the coast of Scotland the name of *Picti* is evident. *Picti* is still in fact known by the name of Kinneil, *Cen*, or *Ceann*, is the Irish or Gaelic word for a head, and *Cennail* in that dialect would mean the head of the wall; and that also the significance of the name of the Picts is evident.

It is remarkable that the antient names of places in those parts of Scotland formerly occupied by the Picts are Welsh, as long ago pointed out by Camden, and have been confirmed by modern writers, such as Chalmers, in his *Caledonia*. On the other hand, it is remarkable that the most antient names of places in Wales are not Welsh, but Irish. This was stated by Humphrey Morgan, *Llandaff*, or *Llandawf*, having perhaps more generally adopted by Welsh antiquaries. These two facts put together would lead to a suspicion, which is not uncorroborated by other circumstances, that the same people which habitually occupied the Highlands and the lowlands of modern Scotland are a remnant of the Picts. This was the opinion of the judicious Camden. If the Welsh, who have always called themselves *Cymry*, are the Cambc of the antient Cambic Chersonese, now, at least, this language would account for the Scandinavian or northern origin assigned to the Picts by the uniform testimony of the Saxons, the Irish, and the Icelandic annalists.

The greatest diversity of opinion has also prevailed as to the extent of the territory occupied by the Picts in the north of Britain. Pinkerton, who considers the Picts to be the same people with the Caledonians, holds them to have occupied not only the Orkney Islands and the Hebrides, but the whole part of Scotland except the counties of Perth, Moray, and the borders of the Clyde, and to have extended their conquests on the east coast as far south as to the Humber. There is every reason indeed to believe that they were at one time in possession of a considerable portion of the Highlands and the Lowlands of Scotland, and it is expressly states that in his time the English held possession of the Pictish province in which stood Aebbercurnig, now Abercorn, in West Lothian, the seat of one of their bishops. Here too was Peanafhel, now Kinneil, and Edinburgh, farther to the east, on the same side of the Firth, is also described by old writers as having been at one time within the dominion of the Picts. But, at least during the greater part of the time that it subsisted, the Pictish kingdom appears to have been bounded by the Firth of Forth to the south, and to the west by the mountainous range still separating the Lowlands from the Highlands of Scotland. The kingdom of Strathclyde, or Cumbria, however, or Reged (that is, the kingdom, by way of pre-eminence) was constantly designated by the Welsh, which comprised the south-west of Scotland, and perhaps also the county of Cumberland (if that did not form a separate state), must be regarded as having also been Pictish. The hypothesis that both the Picts and the Welsh, the latter being admitted on all hands to be of the same race with the people of Strathclyde.

The history of the Pictish kingdom established in the north-east of Scotland is, as may be supposed, exceedingly scanty and obscure. The Scottish and Irish chronicles...
however supply five different lists of the Pictish kings, no one of which evidently has been copied from another; although they all agree substantially, with the exception of such variations as tend to establish the independent authority of each. From these lists Pinkerton has framed a Pictish chronology, which he divides into two portions: the first, which he entitles Pictish, extending from the foundation of the monastic houses of Crunnan, or Crudine (whence the Irish name for the Picts), about A.D. 28, through a succession of thirty-six kings, ending with Talorc I. A.D. 414; the second, styled Historical, extending from the succession of the successor of Talorc and including the whole period of the subjection of the Picts to the territories in the reign of Brudi VII. Besides the succession of the kings, a few events of Pictish history are also recorded by the Irish and Icelandic writers of the eleventh century. This work is very valuable, as it contains the only record of the history of the Picts which has come down to the present day. These consist chiefly of the foundations of a few towns, and of battles fought with the Scots, or Irish colonists of the north-west of Scotland, with whom the Picts appear to have been almost constantly at war from the first. It was the result of these new settlers in the country about the beginning of the sixth century. Bede and Alford state that the Southern Picts were converted to Christianity by St. Ninian about the year 412; but it may be doubted whether these were the Picts living between the Forth and the Grampians, as Bede affirms, or the people of Strath-Clyde, among whom it is known that Ninian was established as bishop of Whithorn, now Whitehorn, in Wigtonshire. The conversion of the Northern Picts is attributed to St. Columba, about the year 565.

No passage of the obscure story of the Picts is involved in greater darkness than the sudden catastrophe which appears to have occurred works upon the Picts living at the principal seat, the north-east of Scotland. The common account of the Scottish historians is, that the Pictish kingdom was conquered in the year 843 by the Dalriadic or Scottish king Kenneth II., who was the son of Kenneth I., king of North Britain into one monarchy. The oldest authorities for this account are the Chronicon Regum Pictorum, written apparently about the beginning of the eleventh century (it contains 227 lines, in which is a bibliography of early Scottish and Innes in 1729); and the Register of St. Andrews, written about 1130. On the other hand it is extraordinary that no allusion be made to any revolution as having taken place at this time, either by a native person, who wrote about 858, and who expressly states that the Picts then continued to hold a third part of Britain; by Asser, the biographer of King Alfred, who wrote before the end of the same century, and who speaks of the Danes ravaging the Pictish people; or by the Scot, Ingulphus, who, in the tenth and eleventh centuries, all continue to speak of the Picts as an existing people; by the Irish annalists Tigernach, who wrote about 1088, and who could not, therefore, have possessed the abovementioned work of Kenneth and Ingulphus, whom be reckons Kenneth himself, down to the death of his son Constantine II., in 875; by the Welsh annalists, who, in like manner, style Kenneth simply king of the Picts; or finally, by the singular genealogical poet of the third century, called the Gaelic or Albanian Duan, belonging to the reign of Malcolm III. (1036-1093), which indeed does not mention the Picts at all, but passes over the reign of Kenneth II. without any remark. It thus appears that neither the Irish, the Welsh, nor the Saxon annalists who lived nearest to the time, ever heard of this subjugation of the Picts by the Scots, which the later Scottish chronicles would have us believe happened to the entire destruction of the nation, and indeed to the utter extermination of that people from the soil of Scotland. Nevertheless, the fact remains unquestionable and undisputed, that Kenneth II., or Kenneth Macalpin, as he is commonly called, having been king of the Dalriads, became also king of the Picts about the date assigned to his conquest of that people; and the probability therefore seems to be that this Dalriadic king had a claim by descent to the Pictish throne; and that the Picts returned victorious from the war between the Scots and Picts, but merely dispute a between him and a rival claimant for the crown of Pictland, which terminated in its acquisition by Kenneth, and consequently in the union of the two races under one sceptre. Kenneth, we may here notice, appears to have followed up this success by a course of policy having for its aim the ultimate incorporation with his own dominions of the adjoining (perhaps Pictish) kingdom of Strathclyde; and that object was in fact accomplished, and the whole of what is now called Scotland brought (nominally at least) under the sceptre of the king of Strathclyde. In his great-grandson Kenneth III. Even down to a somewhat later date than this however, a great part of the north-east of Scotland appears to have been actually held by Norwegian princes, who did not acknowledge the sovereignty of the descendants of Kenneth Macalpine, that one of the great Highland chiefs of the west long continued to maintain almost as substantial if not as openly avowed an independence.

Certain singular architectural remains found in some parts of Scotland are still popularly known there by the name of Picts' houses: and the Picts, or Pechs, live in the traditions of the country as a people of almost superhuman strength and longevity. This was chiefly due to indicate the possession by that race of a more advanced civilization than belonged to the other races by whom they were surrounded. Many carvings on stone, of a very remarkable character, the prevailing emblems being a serpent with a zigzag line passing through it, and two or sometimes three circles united by double parallel lines, are scattered over the whole of the tract which once formed the dominion of the Pict; but these curious monuments have not yet received the investigation they deserve, and whether they are Pictish or Norwegian remains doubtful.

(An account of all the principal works relating to the Picts and the other ancient inhabitants of Scotland which had disappeared down to the date of its first publication, with an introduction to Pinkerton's Enquiry into the History of Scotland preceding the reign of Malcolm III., 2 vols. 8vo, London, 1789, and 2nd edit., Edin., 1814. Among the most valuable of these works are: the Introduction to Pinkerton's Enquiry into the History of Scotland preceding the reign of Malcolm III., 2 vols. 8vo, London, 1789, and 2nd edit., Edin., 1814. Among the principal of these works are: The Introduction to Pinkerton's Enquiry into the History of Scotland preceding the reign of Malcolm III., 2 vols. 8vo, London, 1789, and 2nd edit., Edin., 1814. Among the principal of these works are: The Introduction to Pinkerton's Enquiry into the History of Scotland preceding the reign of Malcolm III., 2 vols. 8vo, London, 1789, and 2nd edit., Edin., 1814.)

PIC 149

PICTURE. [PAINTING.] PICTURESQUE (in Italian Pittoresco, painter-like or picture-like, and therefore expressed in German by the word Malerisch, which is of exactly the same import) is that quality which particularly recommends objects for pictorial representation. Consequently, in order to ascertain wherein this quality consists, it is necessary to consider what it is that independently of other things contributes to the value of a picture, and recommends the particular class of objects for pictorial representation. The picture is a representation upon a surface plane of bodies in relief, described as they appear to the eye, by means of form and colour, and by the light and shade, which degree of relief or illusion will generally be in proportion as the objects themselves are favourable to artistic execution on account of the apparent diversity and variety which they present to the eye and by which they are represented in painting, although in themselves, or taken separately, they may appear monotonous. Hence, provided any object presents that variety to the eye which the artist requires in order to the objects themselves, or by the artificial manner in which unpicturesque it may be when otherwise viewed, or though it should possess in itself none of those qualities which are commonly insisted upon as essential to the picturesque. The ideal of the beautiful is not seen in the 419, which is generally referred to as an authority upon this th
subject, 'instead of being picturesque, disqualify the object in which they reside from any pretensions to picturesque beauty. A mere patch of spots or stipples is of course not meant and disqualifies in turn; for how can we reconcile it with fact when we observe that many things which are remarkable for the very smoothness here objected to as a disqualification, are selected by the artist as being adapted for his pencil. The quality of satin and satin; and the idea of smoothness, it may be presumed, and generally of uniformity of colour also throughout the material, is excited in the beholder; but then, in order to produce such appearance in accordance with this idea, must either the number of rays and colours; some of them quite different from the local or positive colour of the object itself, in order faithfully to express all the various modulations which the actual colour of the object produces from light, which is just as it is intended to be represented in the picture. For instance, in painting white satin, there will be comparatively little pure white—only on the high lights—but chiefly the middle tints, half shadows, reflections, and full shadows, so that if that part of the canvas was cut out, it would appear only a rough blotched surface, like the stains on a weather-beaten wall, than which it is no picturesqueness, and for the same reason, namely, on account of the variety and irregularity it presents to the eye in the breaking of the surface: and it is this kind of variety, not roughness or rudeness or irregularity in the thing itself, that, as far as colour is concerned, qualifies objects for pictorial representation.

The belief which appears generally incorrect, is that the picturesque is something distinct from and opposed to beauty, whereas this is very far from being the case; for although there is an extensive class of objects which are disregarded by them almost entirely, and which, when they are beautiful in themselves, are far from being deficient in picturesque quality. It is true there are also not a few that are eminently delightful or beautiful in nature, yet become insipid in representation; but that is because they are deficient in that variety of colour and form which pictorial demands. A level well-kept lawn presenting a uniform surface of rich verdure is beautiful, that is, excites lively pleasurable emotions, but it is so far from picturesque that it is generally made use of as an argument to prove that neatness and smoothness are incompatible with picturesqueness. Such an object undoubtedly, when transferred to the canvas, does not produce a good effect, inasmuch as it is then shown only as a monotonous broken green colour: this however is only true when no diversity is produced by treating the subject picturesquely. If we break its uniformity of surface by figures, by shadows, by reflections, and any gradations of tone through it will be projected to convey the idea of being a level piece of grass, it will be diversified of its monotony, and may even become picturesque, if it should produce a good contrast to other parts.

The same thought holds true with respect to trees. It being by no means correct that objects are picturesque in proportion as they are irregular and devoid of symmetry. To say therefore, as Gilpin has done, that if we introduce a piece of regular architecture into a picture without any of the disfigurements occasioned by accident or decay, 'it immediately becomes a formal object and ceases to please,' is either a very erroneous or a very imperfectly expressed idea. Most undoubtedly, if it be shown merely in elevation, a structure without symmetry will be a form, but unpleasing; but then there is no occasion for its being so exhibited; on the contrary, by means of judicious foreshortening or perspective, of shadows thrown upon it so as to break up its surfaces into an irregularity; colour is given to it, making a part parallel to the picture, it will undoubtedly be formal and monotonous, but if it is shown obliquely and from a near station, so as to be considerably foreshortened, though we still feel that it is precisely the same object, the disfigurements of the columns all equidistant and equal in height, the representation is produced by unequal spaces and unequal heights; the horizontal lines vanish obliquely, the farther parts are diminished, and many are partially concealed or indicated only by those which are shown; besides which the whole may be so broken by shadows falling upon the object, and by a suitable arrangement of the storm and disqualifying remarkable for the very smoothness here objected to as a disqualification, are selected by the artist as being adapted for his pencil. The quality of satin and satin; and the idea of smoothness, it may be presumed, and generally of uniformity of colour also throughout the material, is excited in the beholder; but then, in order to produce such appearance in accordance with this idea, must either the number of rays and colours; some of them quite different from the local or positive colour of the object itself, in order faithfully to express all the various modulations which the actual colour of the object produces from light, which is just as it is intended to be represented in the picture. For instance, in painting white satin, there will be comparatively little pure white—only on the high lights—but chiefly the middle tints, half shadows, reflections, and full shadows, so that if that part of the canvas was cut out, it would appear only a rough blotched surface, like the stains on a weather-beaten wall, than which it is no picturesqueness, and for the same reason, namely, on account of the variety and irregularity it presents to the eye in the breaking of the surface: and it is this kind of variety, not roughness or rudeness or irregularity in the thing itself, that, as far as colour is concerned, qualifies objects for pictorial representation.

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est.) In the last century the House of Savoy became possessed also of the extensive district called Novara, which was formerly part of the duchy of Milan. [Novara.]

The inhabitants of Piedmont, generally speaking, are one of the most fertile, healthy, and prosperous in Italy. It produces corn, rice, Indian corn, wine, fruits in abundance, timber, trees, excellent pasture for cattle, hemp, and silk. Oil is a product of Piedmont. The system of irrigation has been long practised in Piedmont, and it is designed to consist of drainage wherever the slope of the ground and the vicinity of running water afford the opportunity.

The population of all Piedmont amounts to nearly two millions and a half, being about three-fifths of that of the whole of Italy. There are several large cities in addition to their country and their sovereign, though by no means severally disposed; they are religious, and the lower orders are even superstitious. The country population is much under the influence of the upper classes, whether singularly or in pairs, and the houses of the numerous, consist chiefly of landed proprietors with a moderate rental, most of whom live in their respective provinces. The Piedmontese are susceptible and hasty; they are fond of conviviality, and are less distinguished for sobriety than the rest of the Italians, but they are also industrious and hospitable. Less poetical than the other Italian nations, they are more disposed to the positive and practical sciences, as well as to the great and important arts. Many of science, mathematicians, engineers, good generals, natural philosophers, historians, classical scholars, and philologists. In our own times, Alfieri, Dumas, the best historian of modern Italy, the poet Silvio Pellico, the orientalist Peyron, the mathematician and astronomer Plans, and several others, deserve mention.

The Piedmontese dialect, which is the spoken language of all the people of the numerous, is the most remote from the written Italian. It is in a great measure an offspring of the Roman language which prevailed in Southern Europe during the dark ages. The language of the Piedmontese consists of a mixture of modern Italian and provincial dialects of the south of France. The pronunciation is a mixture of French and Italian; it has the French sounds of the cou and or, which Alferi liked so much; but at the same time the Piedmontese retain the Italian sound of the c and of the, and when they speak French they find a difficulty in pronouncing the ch and the French j. The Piedmontese is also a written dialect, and is well adapted for poetry. Calvo and others have written poems in it, and Brofier has lately published a volume of Caunzi (Poesie Piemontesi del Medico Edoardo Calvo, Torino, 1816; Canzoni Piemontesi di Angelo Brofierio, Lugano, 1839). A Piedmontese vocabulary, by Zalli di Chier, was published in 1812; and a more comprehensive one has been published by Michele Ponsa, Torino, 1827.

PIEPOWER COURT. [PIEPower CourT.]

PIER (from the French pierre, stone) the general name for the solid spaces between a series of openings in a wall, whether windows or arches; but in its technical meaning the term is more particularly applied to the pillar-like masses of masonry or brick-work from which arches spring, rising from the floor. A relieving arch is a term used to describe a pier which generally consists of a series of mouldings, although sometimes it is merely a plateband, and occasionally the impost is omitted altogether, especially in rusticated basements. For the reasons of supporting the weight of the walls and the weight of the arches, no rules either can or need be laid down, because it must be more or less regulated by circumstances, and we accordingly find very great differences in this respect in examples of equal authority, and consequently for greater diversity of architectural character is thus attainable than if any one fixed standard were constantly adhered to. Besides which, the bulk or breadth and thickness of piers must depend in a great measure upon the solidity required for the building and the weight they have to bear and support. Thus, when it is concerned, the breadth of the piers should never be much less than one-third of that of the arches (supposing the latter to be open ones), otherwise the effect will be meagre and deficient in solid and of appearance; and in architecture excess of solidity even appears to be an unnecessary defect than the contrary one. Much also depends not merely upon the width, but the proportions of the arches themselves, for if very wide, or less than twice their width is required in the piers; and in the openings between them are of lofty or narrow proportion.

In the external arcade or piazzas (PIAZZA) of the old Royal Exchange, London, the piers were exceedingly narrow or slender compared with the arches, so much so as to be little more than square pillars or insulated pilasters with arches springing from them. It would be better therefore in similar cases to treat them altogether as such, converting their impost into pilaster or simple caps, as they are commonly done; for instance, in the arcade or loggia of the Southwark Railway Terminus at Vauxhall, where, but for such expedient, the piers would look offensively meagre.

Piers are frequently decorated with either pilasters or engaged columns, their form being such that the archivolts of the arches will fill up the space between the openings and the columns. In many instances columns are substituted for piers, placed either singly or in pairs, in which case the impost is built up from their capitals or from an entablature over them. There are again many examples in which both piers and a lesser order or sub-order of columns are employed, the latter being insulated on each side of the pier, and their entablature forming the impost from which the arches spring. Palladio's Basilica, or Palazzo di Raggio, at Vicenza, affords an example of the kind, in which the faces of the piers themselves consist of a larger order in half columns, so that the whole composition resembles a series of elevated and arched Venetian windows entirely filling up the spaces between the larger columns. Besides these and other modes of decoration, niches are occasionally introduced as ornaments to piers.

In Gothic architecture (where open arches seldom occur except singly, in the exterior of buildings, as in gateways and porches), the insulated piers supporting what are described as arches are distinguished by being distinguished by being not rectangular in plan, but splayed off or turned diagonally; and their splayed sides are broken into small attached pillars, or else moulded shafts, which latter are sometimes a continuation of the arch itself, carried downwards from the impost by capitals or horizontal mouldings to the shafts, yet sometimes terminating below in moulded bases; at others dying into or uniting with the plain surface forming the footing or general base of the pier.

The term pier is also applied to the solid masses supporting the arches of a bridge; with the exception of the extreme ones, which are distinguished by the name of abutments. [Abutments.] The piers of bridges have no impost mouldings, and they are carried quite through the structure, their depth being equal to the breadth of the bridge itself from the parapet on one side to that on the other.

Pier is likewise the name given to a mole or jetty carried out into the sea, whether intended to serve as an embankment to protect vessels from the open sea, or merely as a landing-place; for which latter purpose suspension chain piers are now frequently employed.

PIERIA. [MAGONDA.]

PIERRE, BERNARDIN DE ST., born in 1737, after studying at Paris, entered the department of civil engineers under the government, or 'ponts et chaussées,' as it is styled in France. A reformed priest, and who had been from time to time after, left him unemployed, and he entered the army as military assistant; but having quarrelled with his superior, he was dismissed from the service. He went to Malta with the promise of promotion, but was not allowed to take his place. He next visited Russia, where he found some friends who obtained for him a situation as engineer in the Russian service, in which he remained some time, and executed several surveys. He had drawn up the project of
PIEG A

a colony of foreigners, to be established on the eastern bank of the Caspian Sea, with a republic, under the protection of Russia. He presented his plan to the favourite

Orloff, who told him coldly that such plans could not suit the policy of Russia. Becoming weary of that country, he went to Poland, with the intention of fighting against

the Poles, but a love intrigue, of which he had at Warsaw detained him there for about a year without doing anything. From

Poland he went to Dresden and Berlin, and at last returned to France, where the Baron de Breteuil procured him a

commission in the French fleet, or Maritain, of the understanding that he was to proceed to the island of

Madagascar to endeavour to realise there his favourite plan of a republican colony. While on the voyage he found out

that a gang of adventurers, who had established liberty on the Madagascar coast, were preparing thither for the

purpose of procuring a supply of slaves. He quarrelled with them, and having landed in the Isle of France, he lived

two years there, after which he returned to Paris, where he became acquainted with D’Aulnem, Mademoiselle d’Espi-
nasse, and other literary characters, who encouraged him to

publish a narrative of his voyage. From that time his career as a literary man began. He afterwards wrote his pretty story

of 'Paul and Virginia," one of the best works of his kind in the French language, and which has established his rank

among French writers. His other works are—1. 'Etudes de la Nature,' 2. 'La Chausse Indienne,' 3. Harmonies de

l’Ego, 4. 'Raccolta dei Viaggi di R.” 'Essai sur J. J. Rousseau," besides several plays. He had a situation under the government, when the Revolution broke out and again reduced him to poverty. The prin-
cipal cause of his ruin was that he was unwilling to support the theories with which the government of his own country;

but when the reign of terror came he was in some danger, especially as he ventured public-

ly to profess his belief in God, which, in 1794, was consid-

ered by some of the ruling men as a ground of suspicion.

At this time a friend of his presented him with the victorious general of the army of Italy, who generously

assigned him a pension. Napoleon himself showed him kindness; he gave him the cross of the Legion of Honour,

with which he placed his namesake, the Lysianus, and his
daughter in the Imperial school of Ecoun.

Bernardin de St. Pierre died in 1814. He was a kind of visionary for the greater part of his life, and his writings

bear the stamp of his character. His works have been col-

lected and published in two volumes, 4to., with his biogra-


Bernardin de St. Pierre must not be confounded with Charles Abbé de St. Pierre, a philanthropist of the early part

of the eighteenth century, known for his project of a per-

petual peace, which he laid before the diplomatics assem-

bled at Utrecht: 'Projet de Paix Perpétuelle,' Utrecht, 1715, in 4to. This peace was the perfect perfection of his plan.

It was placed in the hands of an education, and numerous other works, which Cardinal Dubois used to call

the dreams of an honest man, but some of which however have been since acknowledged to be susceptible of being

realised.

PIRTISTS, the names given in the seventeenth century to a kind of German Methodists or Evangelicals, who,

being members of the Lutheran Church, were dissatisfied with the cold dogmatism of the generality of its clergy, and

felt the want of a revival of religious feeling and of practical piety and charity. Without separating themselves from

the church, they instituted meetings called 'Collegia Pietis-

tatis,' from which the denomination of Pietists was derived. Philius was one of the Pietists, and a divine of the Luther-

ian Church, who was preacher at Frankfort and afterwards at Dresden and Berlin, was the chief promoter of these meetings, which

began about 1670. He wrote several sacrett works, and died in 1785. [Marmontel.] A spirit similar to that of the

Pietists of Germany has arisen in our own times in the Swiss and French Protestant churches, and the promoters of it, after suffering considerable annoyance from the less religiously inclined community, have at length had a revival of evangelical doctrines and practice. They have

been styled in derision 'Momiers' (from momerie, mum-

nery), a name which the great majority of them are far from liking.

PIETRA MALLA. [Tuscany.]

PIAGFETTA, ANTONIO, born at Vicenza in the latter part of the fifteenth century, of a patrician family, applied himself to the study of mathematics and geography,

Being highly interested in the discoveries which were then being made by Spanish and Portuguese explorers, he set

out for Spain in the suite of the papal nuncio to that country. Finding that an expedition was going to set out from Seville under the direction of Magalhães, he asked and obtained leave to join it as a volun-

teer. The expedition sailed from St. Lucara in September 1519. [Magalhães.] Pigafetta, being a volunteer on

board, and having no obligatory duties to perform, wrote day by day a journal of the voyage. Being gifted with a

robust constitution, he was enabled to escape the hardships and endured the diseases which destroyed most of the crew.

He was present at the landing on the Philippine Islands, where Magalhães lost his life, and was wounded in the

fighting which followed. He was one of the only two that remained out of the fire which had sailed together. He landed at Seville in September, 1522, having performed in the course of three years the first voyage round the globe. After repairing to church with his

travelling companions in solemn procession and barefooted to thank God for their safe return, Pigafetta went to Vala-

dolid, where he presented a copy of his journal to Charles V.

Pigafetta afterwards returned to Italy, and, at the re-

quest of theVenetian Senate VII, he wrote a shorter account of his voyage, with a description of the strange coun-

ty he had visited, and short vocabularies of the lan-

guage of the Philippine and Molucca Islands. This narra-

tive he dedicated to the Emperor Charles V., and sent him a MS. copy to the Princess Louisa of Savoy, from which a French abridgment was made by a certain Fabre, and published at Paris without date. Of this the first volume of his 'Raccolta di Navigazioni e Viaggi,' fol., Venice, 1550. At last Amoretti discovered in the

Ambrosian Library at Milan a complete copy of Pigafetta’s original narrative, which he published, 'Primo Viaggio in
torno al Globo,' 4to., Milan, in 1734, in 65 plates, drawn from the maps and sketches which accompanied the MS. Pig-

afetta's was the first account that Europeans had of the islands in the Pacific Ocean. Of Pigafetta’s personal his-

tory after his return to Italy nothing is known. It is said that he was a gentleman of some fortune; he was a knight of the first order of the Emperor of the Holy Roman Empire; he was a member of the Senate of Venice, 1705, and in 1718 he was a member of the imperial council in Rome. He is said to have lived to a great age, and was another of the few who attained the great age of 100, and died in Venice in 1732. On his return to the Netherlands he was made librarian to Cardinal Granvelle, after whose death he was appointed by the
duke of Cleves preceptor to his son, with whom he travelled through the whole of Germany, and died at Vicenza in 1575. The young man however died at Rome, and Pigafetta returned to the patrician condition in which he was re-

tired to the town of Xanten, of which he was a canon. He died in 1604, after publishing the first volume of his great work 'Annales Romanum,' leaving the MS. of the re-
minder to the Jesuit Andreas Schott, who published the two following volumes. The full title of the work is 'Annales Magistratuum et Provinciae S.P.Q.R. ab Urbe Condita, ex Actis et Antequatamque variis Monumentis suppleti; in quibus Reipublicae Mutations, Potestatum ac Imperiorum Successiones, Acta, Leges, Bellis, Clades, Victories, Manubia atque Triumphi, neeun infrustria Stemmata, semperque regnum, aetatemque ætatis, temporis sua reduncturum, 3 vols. folio.' This work gives a Pictius a chronicle of Rome year after year, from the building of the city, to the death of Vitellius, a.d. 69, the names of the consuls, tribunes, censors, aediles,questors, praetors, proconsuls, where their titles can be ascertained from ancient writers or monuments. He also notices briefly the principal events of each year, carefully quoting his authorities. Wherever an important fact is described, he has noticed. He also mentions the titles of the principal laws and senatus consults, under their respective years. It is altogether of vast research and erudition, which cost the author more than twenty years' labour. His chronology has been found faulty, as most Roman chronologies are. (See Fortia d'Urban, in the French edition of Tacitus, by Dureau de Lamanle.) Pighius also published a good edition of Valerius Maximus, with valuable notes in f. 1585.

P. NIGRUM NIGRUM

[Ex.] PIGNEROL, or PINEROLLO, a province of the Sardinian states, bounded on the east by the province of Turin, on the south by that of Saluzzo, on the north by the province of Genoa, and on the west by the sea. This province divides it from France. It is a mountainous region, being covered by forests of the Alps, which form several valleys, through which flows the Chisone and other affluents of the Po, in the road which crosses Mont Genèvre leads from Briancon in France to the town of Pignerol. A part of this province is occupied by the district of the Valdeses, consisting of three or four elevated valleys at the foot of Mont Genèvre. [Valdeses.] The population of the province of Pignerol is estimated at 111,600 inhabitants, distributed among eighty-nine communes. (Serritori's Statistiche di Italia, 1833.) The principal towns are the following: 1. Pignerol, situated near the river of the same name, is a bishop's see; it has several churches and convents, a handsoned cathedral, a large hospital, several manufactories of silk, woollens, and leather, and about 11,500 inhabitants. 2. Vilafranca di Piemonte, situated in a fertile country near the confluence of the Chisone with the Po, contains 7600 inhabitants. 3. Cavour, with 6400 inhabitants. 4. Fenestrelle, in the valley of Prateglat, at the foot of the high Alps, is a small town with about 4000 inhabitants; it is only one day's journey from Genoa, and effectually situated on a bleak mountain, which was one of Napoleon's state prisons, and of which a full account is given by Cardinal Peace, in his 'Memorie Sistiche,' 2 vols., 1850. The cardinal was confined in this fortress during the war in various conditions, from August, 1809, to January, 1813, for his fidelity to Pope Pius VII. 5. Cumiana has 5000 inhabitants.

The province of Pignerol produces good wine, silk, and some corn; it also abounds in cattle. Chestnuts are plentiful in the mountains. The chamois, the wolf, and bear are found in the high Alps. "Neigebar; Calendario Sordo.

PIGNOTTI, LORENZO, born in 1739, at Figline in the Val d'Arno, studied medicine at Pisa, where he took his degree of doctor of medicine. After practising for some time at Florence, he was appointed professor of medicine at the university; and he spent the greater part of his life, and died in 1812. His principal work is the history of Tuscany: 'Storia della Toscana sino al Principato, con diversi Saggi sulle Scienze, Lettere, ed Arti,' 9 vols. 1805., which was published after his death. He writes on the history with the antient Etruscans, and continues it through the long period of Roman dominion. He describes the vicissitudes of the Tuscan cities after the fall of the Western Roman Empire; and he is the historian of Pisa, and Siena, and concludes his work with the fall of the Florentine republic and the assumption of supreme power by the second house of Medici. Galiuzzi has written the biography of Pignott, and observes that he was a fierce partisan of the Meditarranean. It is the Serpe microstoma of Risso; has a very short snout; the lower jaw projects beyond the upper one, and it is furnished, as well as the small intermaxillaries, with very minute hollow and pointed teeth; the eye is large, and the lateral line is furnished with a series of strong scales; there is but one dorsal fin, and that is placed a little behind the ventral.
The genus *Stomias* contains two species, both of which are found in the Mediterranean, and are remarkable for their black colour with series of silvery spots; they have the muzzle very short, the mouth very deep and the teeth mostly simple, the opercula reduced to a little membraneous lamina, and the maxillaries fixed to the cheek; the maxillaries, intermaxillaries, palatine bones, and tongue are all furnished with long and curved teeth. Both the body is elongated, and the ventrals are placed far back.

*Chauliodus* differs chiefly from *Stomias* in having two teeth in each jaw, each pair crossing with the opposite when the mouth is shut; the second, the first elongated into a spine (or dentiform) is placed opposite the spine which intervenes between the postorbitals and ventrals.

Only one species of this genus is known; it is fifteen or eighteen inches in length, and of a deep green colour. This species, which is the *Chauliodus* Sohni of Schneider, is found at Gibraltar.

The species of the genus *Salanz* (Cuv.) are distinguished by their depressed head, the opercula folding beneath; four branchiostegal rays, the jaws short and pointed, and furnished with hooked teeth; the lower jaw somewhat elongated at the symphysis, and bearing a small appendage which is furnished with teeth—no teeth either on the palate or tongue.  

*Beline.*—This genus is established by Cuvier upon the *Bore Belone* (Garfish) of Linneus, and some other species differing from the true pikes in having the jaws much elongated and slender, the upper jaw is of the intermaxillaries; both jaws are furnished with small teeth, but there are no teeth in the other parts of the mouth; those of the pharynx are like paving-stones; the body is much elongated, and furnished with scales, but are however indistinct except on the lateral line.  

*Garfish.*  

*Scomberesox.*—In this genus (which is instituted by Lacépède), as in *Belone,* the body is elongated and slender, the jaws short and pointed, and furnished with hooked teeth; the lower jaw somewhat elongated at the symphysis, and bearing a small appendage which is furnished with teeth—no teeth either on the palate or tongue.  

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more or less thick calcareous support, on which the animal
is attached by the same horse-shoe-shaped muscle which
is the species of Hippoponea then remains necessarily attached, after the shell of the gastri,
and Cramer, to submarine bodies. This manner of life
in a cephalic mollusk, and the property which it possesses
of not resting on the ground, but being support,
gives it a resemblance to a bivalve shell without a hinge,
the support, which, in some species, diminishes insensibly in others, and
sometimes becomes very delicate. M. Deshayes states his know-
ledge of certain species which, instead of secreting a sup-
port, offers them to the same depth the place on which they live. This
impression offers exactly the same form and the same accidents
as the more or less thick support above noticed.
Between these species and the other ones of the same class, leaving any trace
on the body which has served them for a
deep place, there exists but very little difference; and it is to be
presumed that there is no considerable discrepancy in the
organization of the animals. Thus, in his opinion, the pas-

tage between Pleopside and Hippoponea is established, and
the opinion of Lamarck justified.

M. Deshayes goes on to state that the discovery of living
Hippoponea having a support* is due to MM. Quoy and
Guignard, and that M. De Blainville, and to whose scient-
ific voyagers, on their return from their first expedition,
had some small individuals preserved in spirit, gives
some interesting details relating to the organization of these
animals. After M. Quoy and Guignard had learned an oppor-
tunity of observing larger species, and he found that the Patella Australis of Lamark was a true
Hippoponea attached upon a very delicate calcareous sup-
port, as a case in point. At the conclusion of the voyage, the zoologist has given
very complete details concerning the animals of this genus,
which prove most evidently the great analogy which exists
between the Hippoponea and the mollusks properly so called that of the Acephala.
These animals are completely
erinopside, and incontestably approximates them to the
Lamellibranchiata; but the branchial organ is very

different, for it is a rigid lamel consistent with the
described animal is comprised between two flaky disks, one of
which is formed by the mantle and the other by the foot, and when
it is entirely detached, it resembles an ascalpial animal
enveloped in the two lobs of its mantle. But Hippoponea
differs from the preceding animals in many points; its mantle,
slightly prolonged into a protoseis, and the arm is armed
with a short tongue, roughened as in the Patella.
The oesophagus is surrounded by a nervous collar, bearing more
resemblance to that of the Mollusks properly so called, than
to that of the Acephalaes. These animals are completely
hermaphroditic, which incontestably approximates them to the
Lamellibranchiata; but the branchial organ is very
different, for it is a rigid lamella contained in a cervical cavity and directed
from left to right. The Hippoponea have, as well as the
Pleopside, in front of the foot, vesicles which are more or
less evident, and in many species it is only the
shell of the mother, and undergoing for a period, the
duration of which is not known, a sort of incubation. As
the one increase in size, the vesicles diminish in number, but
are augmented in volume. Such are the results of the
observations made by M. Quoy.

M. Deshayes calls attention to the fact that many of the
so-called Patella—Patella Galathea and tricostata, for
example, should be placed among the Pleopside; and
that Patella Australis should be arranged with the
Hippoponea.

Mr. Garver seems to be also of opinion that Lamark
has assigned its true place to Hippoponea. The Patella,' he
says, are numerous and of several forms. The new
animal, attached to its shell by a muscle in the shape of a
horse-shoe, is provided with a foot comparable with that of the
Patella; that it has a rather large cervical cavity containing a
periclitated branchia comparable with that of
the Cerephala, and lastly that it has a proboscis form
head, with two tentacles with eyes at their base. Observa-
tion has long demonstrated that the true Pleopside, though
they live after the manner of the Patella, are still more
sedentary than the latter; for they may be seen, in certain
individuals of the Pleopside Ungaria, irregularities proceed-
ning from the body on which it has lived when young contin-
uing exactly the same to adult age—irregularities whose
true causes are not recorded; but we believe that this is so,
prove, in the opinion of M. Deshayes, that during its whole
life the animal has never changed its place. This mode of
existence approaches closely to that of Hippoponea. The
latter cannot be made to resemble the Patella exactly; it is of such a figure that no rotation can take place. The
Hippoponea another Gasteropod, forms cavities in the Patella
and other shells to which it adheres.

Mr. Swainson (Micology, 1840) places both Pleopside
and Hippoponea among the Molluscan, or Lutepods.

* Quay: fossil; and being in mind the agency of currents of water produced
by the action of such. [LUTEPOMAD, PASO, &c. See also post, p. 160.]

† Zool. Trans., vol. 11, when sticking to a rock often forms a hole an inch in depth, and this by the action of its ciliated branchia; the hole
is probably not made in dragging, but is of such a figure that no rotation can take place. The
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and other shells to which it adheres.
He makes the genus *Hipponyx* succeed the genus *Emargi-
num*, and gives *Hipponyx* and *Pileopsis* as subgenera of the for-
mer.

**Hipponyx.** (Defrance.)

*Generic Character.—Animal oval or subcircular, conical or depressed; head globular, carried at the extremity of a sort of neck, on each side of which is a tentacle convex at its base, and terminated by a small conical point; eyes placed on the tentacular convexity; mouth with two small labial tentacles; foot very delicate; thickened towards its borders, which lessen and enlarge like those of the mantle, to which it bears a complete resemblance; branchiae situated above the origin of the back; anus at the right side of the cervical cavity; oviduct terminated in a large tuber-
cle at the root of the right tentacle. Shell conoid or depressed, the apex not spiral; aperture with irregular edges; cavity deep, with a muscular impression in the form of a horse-shoe; a rounded lamellar support, or an impression on the body serving as the resting place of the animal, presenting also a muscular impression of a horse-shoe shape. (Rang.)

The number of living species given by M. Deshayes in his tables is six; in the last edition of Lamarck the num-
ber is three. These are *Hipponyx acuta*, *fuscula*, and *suturales* of M. Quoy; the first from the seas of New Hol-
lund and the two last from the island of Guam in the archi-
pelago of the Marianne islands. To those, according to his
own showing, *Patella Australis* should be added; and also
the *Patella mitrata* of Linnaeus.

**Habits, &c.—**The genus is marine, and has been found attached to stones and shells at depths varying from the surface to sixteen fathoms. **Example, Hipponyx acuta.**

**Description.**—Shell solid, ovate, strongly striated longitudi-
nally, the margin crenulated, violaceous; the vertex long, acute, and straight; white internally. **Locality.**—The seas of New Holland.

![Image of Hipponyx acuta](image)

**Pileopsis.** (Lam. Capulus, Mont.)

**Generic Character.—Animal conical, slightly spirally at
the summit, furnished with a distinct head which has a pro-
boscis terminating the mouth; in front of the anterior border of the foot a double membrane forming numerous folds; the tentacles are nearly cylindrical, stout, obtuse, and carry
the eyes on small convexities a little above their external base; foot large, but very anterior and delicate; mantle simple and without ornament; branchial cavity open ante-
riorly; branchiae composed of many narrow and longitudinal
laminae, which adhere by a single transverse line to the
plafond; orifice of the anus towards the right side of that cavity. Shell irregular, conical, with the apex more or less inclined or spiral, directed backwards; aperture rounded, with sim-
ple, irregular, and continuous borders; cavity deep, offer-
ing a muscular impression in form of a horse-shoe, open
anteriorly. (Rang.)

**Habits, &c.—**This genus, like *Hipponyx*, is entirely ma-
larine, and has been taken adhering to shells and stones at
depths ranging from the surface to twenty fathoms. The Pacific, the East and West Indies, and the coasts of Europe, are the localities principally known.

The number of living species recorded by M. Deshayes in his tables is seven, and of these one, *Pileopsis Ungarica*, is noted as fossil and fossil (tertiary); the number given in the last edition of Lamarck is six, to which, as we have
seen, *Patella Galatheae* and *tricostata* are to be added.

**Example, Pileopsis Ungarica.**

**Description.**—Shell conico-acuminate, striated; the ver-
tex uncinate and revolute; aperture rather wider trans-
versely; rosy within. The epidermis is somewhat horny, thick, and velvety.

**Locality.**—The Mediterranean and the shores of the Atlantic. Abundant on our own coasts. One of the best
figures we know is given by Mr. G. B. Sowerby, in his Ge-
nera (No. xxxviii.).

![Image of Pileopsis Ungarica](image)

**Pileopsis Ungarica.**

a, the shell in situ; b, inside view of the same.

**Fossil Hipponyces and Pileopside.**

**Hipponyx.** Lamarck has described some fossil species among the *Patelle* under the name of *P. Cornucopia* and *P. dilata*, and Mr. G. B. Sowerby (Genera) states that all the species known are from the calcaire grossier: (but see below).

The number of fossil species (tertiary) recorded by M.
Deshayes in his tables is twelve, and a "new species" is noted as both living and fossil (tertiary). The localities for these fossils are Sicily, Italy (Subap.), Bordeaux and Dax, To-
raine and Torin. Paris is given as the locality for eight.

In the last edition of Lamarck six is the number recorded, including *Hipponyx Cornucopia*.

![Image of Hipponyx Cornucopia](image)

**Hipponyx Cornucopia.**

a, external view of the upper valve; b, internal view of the same; c, inside of lower valve.

**Pileopsis.** Mr. G. B. Sowerby states that he is not ac-
quainted with many recent species, but that several are com-
mon among the fossils of the tertiary beds. M. Deshayes,
in his tables, gives the number of fossil species (tertiary) as
six, *P. Ungarica* being both recent and fossil (tertiary), Baden; the other localities being Sicily, Italy (Subap.), theEnglish Gers, Bordeaux and Dax, and Touraine.

Professor Phillips records *Pileopsis* † *trilobus*, *P. tubifer, P. striatus, P. nertioides, P. estusius* and *P. angustus*, from the mountain limestone formation of Yorkshire and other districts. (Illustrations of the Geology of Yorkshire, part ii.)

Mr. Murchison, in his catalogue of the shells of the mid-

* Pileopsis is generally considered to be feminine,
die Ludlow rock, records the only imperfect specimen yet obtained from the Aystreme limestone: the apertures appear less expanded than in the Pileopsis vetula of the carboniferous limestone. (Siliuerum System.)

PILERS, ROGER DE, who belonged to one of the best families in that part of France of which he was a native, was born in the year 1635, at Clamecy, in the province of Le Nivaros, which is now the department of La Nièvre. He was educated in the Roman Church, and received a solid education, but as he evinced a most decided inclination for the art of painting, he was allowed to follow the bent of his genius. Circumstances however prevented his being himself engaged at first in that art. Having been engaged by president Amelot, in 1662, as a tutor to his children, he accompanied young Amelot to Italy, and on his return published some essays on painting. He was an intimate friend of Alphonse Dufresney, whose head was on painting, he translated which, with explanatory notes. Amelot de la Houssaye, his pupil, having been appointed ambassador to Venice, De Piles was employed as his secretary of legation. He also accompanied him on some other missions: thus he went to Lisbon in 1685, and to Switzerland in 1689, and had the honour to be the bearer to Louis XIV. of the treaty of Neutrality, which his ambassador had just concluded with the thirteen other states of Europe. The arts and public affairs, induced Louis to send him to the Hague, under the pretext of following his profession as a painter; but in fact to enter into secret negotiations with Holland. This he was desirous of undertaking. Being discovered, he was arrested by order of the Dutch government; and during his confinement he wrote his 'Lives of the Painters.' When he returned to France, a pension was granted him. Amelot being appointed ambassador to Madrid, De Piles accompanied him, but his health being very indifferent, the climate of Spain did not agree with him, and he was obliged to return to Paris, where he died on the 4th of May, 1709.

The practice of painting, and the many occupations prevented him from devoting himself to the study of his art, he had acquired principles which in some measure compensated for want of practice. He was profoundly skilled in chiaroscor, and had a genius for portraiture, his pictures are extolled, especially those of Boileau and Madame Dacier. His printed works are distinguished by a clear and unaffected style and refined taste; but his predilection for the Flemish school has sometimes rendered him partial in his judgments. His admiration of Rubens, in particular, was such, that he is said to have preferred him to Raphael. Besides his 'Lives of the Painters,' which have been translated into English, he wrote several other works on painting. All these are in the Latin language, and have been published in 5 vols. 12mo. He likewise composed 'Abrégé de l'Anatomie accomodée aux Arts de la Peinture et de Sculpture.' Paris, 1667, 8vo., with plates, all after Titian. (French Biog. Soc.)

PILOMIR is the name given to a person who travels for the purpose of visiting the shrines or tombs of holy men, and the set itself is called Pilgrimage. The words pilgrim in English, pélerin in Italian, pelerin in French, are all corruptions of the Latin 'peregrinus,' which means a stranger or foreigner. Pilgrimages to Jerusalem, Bethlehem, and other places which were the scenes of the Saviour's life and death, and which are included in the general name of the 'Saints' Land,' have been of importance since the time of Constantine. We are told by Eusebius and others that Helena, Constantine's mother, proceeded on a pilgrimage to Palestine, and built the church of the Holy Sepulchre. The practice became common about the end of the fourth century, and we find it noticed as such by the fathers of the church, Jerome, Augustin, and others. Gregory of Nyssa, in one of his epistles, reproves the indiscriminate reverence paid to these places, and says, 'Pilgrimages are of no advantage to a preacher, and do not become a saint.' The pilgrim is, however, one of the most popular of all religious occupations, and is indulged for some of her numerous legends, and for the chief part of her chivalric lore.' (Dunham, History of Spain, b. iii., ch. 4.)

The pilgrimage to the Holy Land was the remote origin of the wars of the Crusades. (Crusades.)

In the west, the celebration of the Jubilee perpetuates the custom of pilgrimages to Rome. The institution of the Jubilee is of the greatest antiquity, but the precise period of the year 1300, a report was spread at Rome that all those who should visit the church of St. Peter that year would obtain a plenary indulgence, and that every centenary year ever since has been considered of equal privilege. Pope Boniface VIII recorded the antient records for the grounds of this report, and he interrogated a man 107 years old, who told him that in the year 1200 a pilgrim, a labouring man, had gone to Rome to get an indulgence, and that he had seen, if he should live to the next centenary, to follow his example, and that the old men in France and Italy confirmed this tradition. After con-
suiting the College of Cardinals, Boniface issued a bull, stating that 'as according to the faithful report of the elders great indulgences are granted to those who visit the church of the prince of the Apostles every hundred year, we confirm them, and grant plenary indulgence to all those who have confessed, and, being duly repentant, shall visit the churches of the Apostles during the present year, 1350, and every other centenary year after.' This is the origin of the festival which was afterwards called jubilee. Fifty years later, in 1365, the pope reduced the term of its recurrence to half a century, and styled it jubilee in commemoration of the jubilees of the Jews, which was celebrated every forty-ninth or fiftieth year, when all slaves became free, and all lands returned to their original owners. In 1370, the jubilee began at Christmas, 1349, and it was attended by a prodigious concourse of people from all parts of Europe; it is said, more than a million at a time. Petrarea, who went to Rome on that occasion, speaks with wonder of the concourse of pilgrims. The crowd diminished during the heat of the summer, but increased again towards the fall of the year 1350, at which time the nobility, and especially the great ladies, from distant parts came. It appears that those ladies came on the road of the Marches, Ancona, where Bernardino da Polenta, lord of Ravenna, one of those robber barons of the middle ages, and his men, lay in wait for them, and ravished some of them, and others were waylaid and murdered. The pope, who wasicia this, adds, that 'had they remained at home, such mishaps would not have happened to them'; and that 'indulgences and pilgrimages are not suited to young ladies.' (Petrarca, Epist. sec. 329.) Similarly, it was reported that they had befallen those ladies who in former ages resorted to Palestine, when pilgrims were exposed to insults and even violence.

Many of the famous foreigners who resorted to Rome in 1350, and knowing any language except their own, could not confess themselves, and were obliged to employ interpreters. In order to avoid this abuse the popes established the 'Penitentiarii,' or confessors who understand the principal languages of the ages, and whose offices were stationed in the church of St. Peter's, and empowered to give absolution in all cases, even in those generally reserved to the pope. The historian Matteo Villani (b.i., ch. 53) says that on the occasion of the jubile of 1349, all the Romans had become free men, that they charged enormously dear for everything, and that there was great scarcity, which added to the fatigues undergone by the poor pilgrims, and the host of the same season thinned their numbers to a fearful extent. The cardinal Cecco, legate of the pope from Avignon, wishing to shorten the stay of the pilgrims, abridged the time allotted for the performance of their devotions, but the people four and four so irritated him that he went to the pope with their complaints, that they oblige him to run away from Rome, and he died on the road to Naples, it was said of poison. (P. de Rienzi, fol. 167; Matteo Villani, b.i., ch. 53.)

The period of the recurrence of the Jubilee has been altered several times; some popes reduced it to twenty-five years, in order that each generation should have the advantage of it. The last jubilee was celebrated at Rome in the year 1825, under Pope Leo XII. There are foundations at Rome for receiving and feeding the poorer class of pilgrims who resort thither at jubilee time; one of these institutions or hospitals is called a Trinità dei Pellegrini. The fashion of devoting separate portions of the church, which has been so much in vogue in our time. The popes granted to several monasteries the privilege of holding jubilee, with the indulgences attached to it, every fifty years; among others to that of Canterbury. Concerning former pilgrimages, much may be said to the ancient chronicles, especially those of the Crusades. Chaucer, in his 'Canterbury Tales,' has given sketches of the pilgrimage to Thomas a Becket's shrine. Henry Watson wrote 'Instructions for Pilgrims to the Holy Land.' Timbres of the post and the travels of the Holy Land have been published. The pilgrimages to Jerusalem, Gaza, &c. For other particulars see Compos- telas; Loreto.

The Mohammedans have also their pilgrimages. According to the Kapos, every Mussulman who possibly can, ought once in his life to visit the tomb of the prophet at Mecca and the Holy Kaaba. (Mohammed.) The ceremonies performed by the pilgrims at Mecca are related at length by Burchard, All Bey, and Planat. (Histoire de l'Egypte sous Mehemet Ali.) There are also sanctuaries for the Mohamedans of the sect of Ali at Mushed in Khorasan, and Koom in Iran Aijmi, which contains the tomb of Fatima, the sister of Imam Reza, which are visited yearly by numbers of Persian pilgrims.

The Hindus also have their places of pilgrimage, the most celebrated of which is Banar, on the Ganges, and the Haidar- nath, on the coast of Orissa in Coramondel, where extensive buildings are allotted for the idol and his priests. The statue of the idol is brought forth at certain periods, and mounted upon an ornamental car sixty feet high, which is dragged along by the devote multitudes amidst crowds of pilgrims who resort thither from every part of Hindustan. The procession is attended by dancing girls and dissolve pilgrims, who perform their devotions, while fanatics throw themselves under the wheels of the car to be crushed to death. The whole scene, of which Buchanan and other writers give a full account, is a frightful compound of superstition, cruelty, and lust, the revenue derived from the tax on pilgrims is said to be frivolous.

The Japanese also are said to have their pilgrimages to the temples of Xinto or Xaca, of which accounts are given by Thumbler and other travellers.

PILING OF SHOT, an instance in which a process of pure mathematics, the summation of series, becomes of immediate application. Three shot, or spherical balls of equal size, placed together on the ground, will support a fourth, and are then said to form a square. More than four can be placed together so as to touch each other and support one more. Hence arise two distinct methods of piloting shot, the triangular and the rectangular.

In a triangular pile the base is an equilateral triangle, with one shot at the vertex, two adjoining, three in the next row, and so on. The number of shot in the base (supposed to have n rows) is therefore 1+2+3+...+n, or \( \frac{n(n+1)}{2} \). The number of interstices in which other shot can be placed is \( 1+2+3+...+(n-1) \), or \( \frac{(n-1)n}{2} \). If a pile be completed until one shot stands at the vertex, the pile will be \( n^2 \) layers high, and counting from the top, the layers will severally contain 1, 3, 6, 10, ... \( n(n-1) \), of which the sum.

\[ n(n+1)(n+2) \]

is the number in a complete triangular pile.

Let there be a rectangular base, say of 16 by 11. The number of interstices is 15 by 10, and when the second layer is put on, the number of interstices is 14 by 9, and so on; whence the eleventh layer is a single row of 6. If \( a \) and \( b \) be the numbers in the longer and shorter sides of the rectangular base, the number in the complete pile is

\[ a(a+b-1)(2a+b-2) \]

If the base be a square, \( a=b \), and the number in the pile is

\[ a(a-1)(2a-1) \]

PILLAR. [COLUMN.]

PILLAU, a seaport in the circle of Pischhausen in East Prussia, in 54° 33' N. lat. and 19° 34' E. long., was founded in 1773, and has only 3000 inhabitants besides 1000 in the fortress. It is situated at the extremity of a tongue of land or peninsula between the Baltic and the Frische Haff. [FRISCHE HAFF.] It is a place of considerable trade, but is too shallow to allow to ships or heavily laden ships to go up to Königsberg and Elbing, they are either lightened of part of their cargo, or remain at Pillau, and the goods are conveyed to those ports by lighter (there called Sendung), which also bring back the return cargoes. In the year 1839, 1420 ships cleared inwards, and 1439 outwards. Near to the town there is a strong fortress, which defends the entrance of the Frische Haff. Besides the employment afforded by the maritime commerce, Pillau importance, for being the place where the Kapos, or ship owners of sturgeons, from the part of which every one is prepared. About five miles from the Haff there is a fine forest of hornbeam, which is called the Prussian Paradise. To the north-west of Pillau are the fisheries, especially those of the coast, this circle producing a greater quantity of amber than anything else in Prussia. In this circle too is the Kaprun heath, where elk are still found. The winds on this coast often tear up the trees and carry the sand into seas, so that the inhabitants are compelled to remove their
halinations from one place to another. Near to Pillau there are two villages—Old Pillau, where there is a lighthouse, and high, and Wogast, where there is a large building for preparing cannon. (Stiwi's Handbuch; Müller's Worterbuch.)

PILLNITZ is a celebrated country-seat of the kings of Saxony, the usual summer residence of the court, near the village of Pillnitz. It is 17 miles south of Dresden on the right bank of the Elbe, about five miles from Dresden. Pillnitz was formerly an old castle. In 1693, the Elector John George IV. purchased it of Heinrich von Dittau, and made a present of it to his mistress, the countess of Rochitz, on whose death it reverted to the crown. Frederick Augustus I. (Augustus II. as king of Poland) gave it, in 1705, to the countess of Coseif. It was afterwards called Pillnitz Castle, and the old palace, between the two southern pavilions stands the Water Palace, and between the two northern what is called the Borg Palace. The old palace, containing the temple of Venus, with the portraits of the kings of Saxony and the empresses of Germany, was burnt to the ground in 1818. A new edifice has been erected on its site, which contains a spacious banqueting-room, adorned with fine paintings in fresco, by Professor Vang USED FOR LESS OF LIFE, less or more, is comprised in a field by twenty pillars. The palace contains also a chapel and a theatre. Behind the village there is a romantic valley called Friedrichenthal, leading to the Borgberg, a mountain nine hundred feet high, from the summit of which there is a splendid view of the Elbe valley. From Meissen to Königstein, bounded by the high land of Meissen, Bohemia, and the Erzgebirge.

Pillnitz has become famous in modern times for the congress of princes which met there from the 16th to the 27th of August, 1791, and at which the Emperor Leopold II., King Frederick William II., the archduke afterwards Emperor Francis, the crown-prince (the late King Frederick William I.) of Prussia, the crown-prince of Saxe Gotha, the ex-minister Calonne, and the marquis de Bouillé deliberated on the measures to be adopted against the French revolution. The congress did not conclude an offensive alliance against France, but a defensive one; and it was in common and to oppose any attack on the part of France. The defensive alliance between Russia and Austria, provisionally agreed on at Vienna, on the 26th of July, and directed against the systems of the revolution, on the 6th of August, 1792, was merely a subject of conversation at Pillnitz. The brothers of the king of France received, on the 27th of August, a declaration from Austria and Prussia, which the French considered as the foundation of the coalition against France. (Stein; Cannabich; Comp. Lex.; Engelhardt, Sachem.)

PILLORY. The pillory was a mode of punishment for crimes by a public exposure of the offender, used for many centuries in most of the countries of Europe under various names. In France it was called pillorie, and, in more recent times, carcan; and in Germany, pranger. In England it existed before the Norman conquest, and was in force in England for a long period, until within the last thirty years. It was finally abolished in the year 1837, by the statute 1 Vict. c. 23. In the laws of Canute (Wilkins's Anglo-Saxon Laws, p. 111) it was called hats. It is called, or becomes, of the name of the neck, a name derived, without doubt, from the form of the instrument used, and the mode in which the punishment was inflicted. Hence also the Latin name of the pillory, collatrigium (qui collaterum cingit, guilty of 'Pillory.') The tumbril, trebuchetum, an obscure punishment, which is said to be the same as the ducking or ebbing stool, and was used for women, who were exempted, on account of their sex, from the punishment of the men, which is in the ancient English laws in conjunction with the pillory. In early periods of English history, the right of having a pillory and tumbril, and sometimes also farce, or gallows, within their jurisdiction, was claimed and insisted on as a beneficial franchise by lords of loca: in process of time this privilege was converted into a barren for the public use; and such persons were made to be bound to a pillory, and to be exposed as an example to it. The pillory was fitted with a frame, which could be moved, and so exposed. (Staatsw. Vol. iii. p. 75.)

The form of the pillory, as used in England in the time of Henry VII., may be seen in a picture of prints published by the Society of Antiquaries. In modern times it was nothing more than a wooden frame or screen, raised several feet from the ground, and behind which the culprit could be seen, supported upon a platform, his head and arms being thrust through holes in the screen, so as to be exposed in front of it; and in this position he remained for a definite time, sometimes fixed by law, but usually assigned at the discretion of the judge who passed the sentence. The form of the judgment was that the 'defendant should be set to and upon the pillory.' In a case which occurred in 1769, an under-sheriff of Middlesex was fined fifty pounds and imprisoned for two months by the Court of King's Bench for exposing a defendant upon the pillory. (Barrington's Antient Statutes, p. 56, note.) On the other hand, where the unpopularity of the prosecution or other causes have occasioned a feeling in the public mind favourable to the offender, the execution of the sentence was sometimes omitted in the case of Eaton, an aged man, who was convicted of an irreligious libel in 1812, at a period of much political excitement; and who, when exposed in the pillory, was received with demonstrations of respect, and so much excitement against the offender. (Burrow's Reports, vol. ii., p. 791.)

The pillory was intended 'magis ad ludibrium et infamiam quam ad punam; but serious injury, and, in some cases, death, could result from the punishment. The sentence was inflicted in a case of treason in 1827. The offender, Dr. Shobden, who had been convicted of a political libel, he had allowed him to be attended upon the platform by a servant in livery, holding an umbrella over his head, and to stand without the privilege of bending his neck, or being confined in the pillory. (Burrow's Reports, vol. ii., p. 791.)

With regard to public exposure of the offender as a punishment is liable to many objections, besides the inequality of its operation; and the efficacy of all punishments which merely disgrace the offender has been questioned by some of the most distinguished modern writers on criminal law. (Rossi, De Diritto di Diritto di Fracasset, &c.) In consequence of the recent direction of the public opinion to this subject, punishments of this kind have been lately withdrawn from most of the modern countries of Europe. The pillory was abolished in 1837, by the statute above referred to; and in France, the carcan was discontinued upon the revision of the Code Penal in 1839; and in the numerous codes and schemes of codes which have appeared in the states of Germany during the last 10 years, punishments by public exposure of the person or otherwise tending generally to degrade the character have been omitted. (Entwurf fü r Wü rttemberg, Sachsen, Hannover, Bade, &c.) It is remarkable that the species of code of 1813, which is generally founded on just and enlightened principles of criminal law, and which formed the commencement of the series of improvements which have since taken place in Germany, contains punishment for capital offences, and these are commuted to the punishment of imprisonment, unless the defendant is convicted, and in certain aggravated cases, undergo a public exposure on the pranger for half an hour previously to his execution. (Statutes für das Balt., &c.)

PILOT. In many maritime countries the name of pilot is applied to a constant officer in a ship, who has the charge of the helm and the general direction of the ship's course; and we have also to a pilot who takes on a passenger. a vessel navigating ships in particular rivers, roads, or channels, or in entering and leaving ports, and who is entrusted with such charge independently of the captain or masters, in consequence of the necessity of the navigation being limited within the limits to which his duty is restricted. In France large vessels usually carry several officers of the former kind, who are called pilotes hau térurs; the latter description of pilot is called pilote côteur, or lamarveur.
PIL\[i\] 160 PIL\[m\]

The antient laws of France contained provisions for the education and regulation of both these kinds of pilots (Pil\[i\], Martin, Rector de la Marine, Lameau et Pi\[o\]; Vain, Commentaire sur l’Ordre de la Marine du Moi d’Aout, 1681, tom. i, p. 483; but they are not mentioned in the Code de Commerce. In England the term is exclusively applied to the latter.

By the laws of many maritime countries, taking a pilot to navigate a vessel on approaching port has been considered from early times to be obligatory on the master. Thus by the laws of Wisby, which were promulgated in the twelfth century, and were incorporated in the marine laws of most European countries, it was compulsory on the master to take a coast-pilot on board, though the merchant or master opposed it. (Ordonnance de Wism. art. 44.) A similar provision is contained in the Consolato del Mare. (Boucher, Consolat de la Mer, vol. ii, p. 429.) In this country, pilots are established at several ports for limited parts of the coast, who are appointed and regulated sometimes by acts of parliament, and sometimes by the corporation of the town, and are limited in time to passagé to regulate the Trinity-house and Cinque Port pilots. All these regulations were reconsidered by parliament in the year 1825, and the majority of them were confirmed in the statute 5 & 6 Geo. iv. 1822, which also contains some general provisions respecting pilots in other parts of the kingdom. (Abbott On Shipping, p. 173, edit. 1840.)

PILSEN, a fortified town, the capital of a circle of the same name, is one of the principal towns in the kingdom of Bohemia. It is situated in the midst of fertile fields, in a beautiful and extensive valley, at the conflux of the Bran\[d\] and Moldau rivers, and also called the Mies; is 9 m. N. lat. and 13° 45’ E. long. It is a large and well-built town, and the houses are mostly of stone. It has three suburbs, and 9000 inhabitants. The most remarkable public buildings are—1, the fine Gothic church of St. Bartholomew, originally built by the Teutonic Knights (1243), with several fine paintings, and a steeple 180 feet high; 2, the elegant gymnasia; 3, the Gothic town-hall; and 4, the house of the Teutonic knights. Besides the gymnasia, there are a military academy, in philosophy and medicine, with six professors, and a lyceum. Pilsen has considerable manufactures of cloth and morocco leather. There are four annual fairs, which are much frequented by persons from all parts of Bohemia. The inhabitants carry on an extensive trade in the productions and manufactures of Bohemia, and in cattle, iron, potashes, feathers, wool, leather, cloth, &c. This trade has been much increased by the establishment of a rail road connexion, which has constructed an iron railway from Pilsen to the gates of Prague, where it divides into two branches, one of which goes to the river Moldau, by which the railway communicates with the Elbe; and as Pilsen is connected by the principal roads with the south and west of Germany, considerable quantities of manufactured goods and merchandise, brought up the Elbe from Hamburg, &c., are conveyed by the railway to Pilsen, where they are forwarded to their ultimate destination. This brisk trade, the fairs, and the presence of a numerous garrison, make this a very lively place. (Hassell; Stein; Gester. Encyc.)

PILUMNUS, Dr. Leach’s name for a genus of brachyru\[p\]rous crustaceans.

Generic Character. — External antenna setaceous, rather long, slender, inserted in the internal canthus of the eyes; internal antenna situated in the transverse fossae of the chaperon. Third joint of the external foot-fare nearly square, subtransverse, notched towards its end and internally. Second, third, fourth, and fifth pairs of feet terminate with five claws. Cartilage transverse, truncated posteriorly. Abdomen of the females ellipsoidal and more or less elongated. Ocular peduncles short and larger than the eyes; a fissure at the bottom of the orbit above and another below.

This genus very much resembles the Crabs properly so called; but differs from them principally in the number of pieces in the abdomen of the male, and is removed from them further by the mode of insertion of the external antenna.

M. Milne Edwards, who arranges the genus under his Cancerniens Arqueus (Platycarcinus), is of opinion that Pilumnus is related to certain Xantho and Pseudocarcinus species. He divides the species, which are numerous, into several sections, according to the absence or presence of spines on the latero-anterior borders of the carapace, and according to the granular or spiny external surface of the exoskeleton.

Example, Pilumnus hirtellus, Leach (Cancreleur hirtellus, Linn.).

Description.—Carapace with four or five depressions on the posterior borders; bands and carapace granulous above and externally; body pale yellowish mixed with brown or red in bands on the feet; both body and limbs briefly with brown stiff hairs. Size rather small.

Locality.—The coasts of England and France; generally found under stones. (Leach, Malac. Brit., t. 12; Penn., Brit. Zool., vol. iv, pl. 6, lower figure.)

PIMENTA, or PIMENTO, the produce of Eugenia Pimenta, a tree native of the West Indies, but cultivated extensively in Jamaica, thence called Jamaican pepper. The unripe two-seeded berries, which are about the size of a pea, are dried by frequent turning in the sun, by which their colour is changed from green to brown or grey. They are much used in the mash; the brownish berries, somewhat rough, crowned with the remains of the calyx, and frequently furnished with a little stalk. The shell is very brittle, about the thickness of a card, and encloses two brown seed-like bodies, 12, which latter contain the true seeds, and having a weak aromatic taste. The shell possesses an agreeable clove-like taste and smell. Two kinds are met with in commerce, English and Spanish, of which the former is the superior.

Pimento berries are said to be adulterated with the berries or seeds of the Cocculus Indicus; these are larger, about the size of bay berries, extremely bitter, and, in large quantities poisonous. The spice is so creditable, for the latter come from the East Indies, are dearer, and could only be successfully passed off when mixed with the powdered berries of pimento. The fraud may be detected by making an infusion, which, if pure, is not disturbed by tincture of gall or acetate of lime, which cause a precipitate when cocculus berries are present.

The shell appears to be the most efficient part, and to contain more of the active principles. Bouquet states (in Jamaica) that 10 per cent. of a heavy volatile oil, 8 per cent. of a green fat oil, an extractive containing tannin, resin, gum, and sugar; also a principle similar to Caryophyllin.

By oil of clove or caraway oil is procured which resembles oil of cloves, and which conducts itself in the same way towards alkalis.

As an aromatic stimulant, pimento stands intermediate between coffee and tobacco, with which it is employed in many cases, respecting its greater cheapness, it may often be substituted.

It is useful in dyspepsia dependent upon stony of the stomach, and in diarrhoea dependent upon a similar cause.

PIMPINELLA, a genus of umbelliferous plants inhabiting open fields and mountains of Europe principally, is chiefly inferior in amount and value to the comprehensive among its species the Anise of the shops. This plant is an annual, with a smooth stem 1 to 14 foot high; the lower leaves roundish, cordate, lobed, and both serrated and cut; those of the upper small, which are rosetted with white down, pinnate, and the upper trifid, with the lobes undivided and linear. The flowers are small and white. The fruit is narrow, slender, rather hairy, with 5 filiform ridges to each one caruncular tooth. The flowers are used externally as a diuretic medicine, and for the purpose of flavouring liqueurs. The plant inhabits Egypt and the islands of the Grecian and Italian, especially Sicily.

Of Asparagus, formerly referred here by mistake, mention has already been made under DILL.
PIMPINELLA ANISIUM. [Carminatives.]

PIN. This simple and well-known little instrument, when considered as an article of trade, is far from trivial, and its manufacture affords an admirable example of the "division of labour," for which purpose it has been employed by Mr. Babbage, in his introduction to the volume on mechanics, in the 'Encyclopaedia Metropolitana,' to which we acknowledge our obligation for several of the facts and hints in this subjoined.

It is not known what time pins made of metal of the present form were first manufactured in this country, but it must have been some time previous to 1543, in which year a statute was passed (35 Henry VIII. c. 6), intituled 'The Act for the making of pins.' They are reported to have been made on a large scale by cultivating, that making that had been made to practice in the making of pins, and it was enacted that in future none should be sold but such as were well pointed and had the heads firmly soldered on to the stems, and further that the price charged should not be more than six shillings and eight pence a thousand. No mention is made of them in any previous statute, with the exception of an act of Richard III., which prohibited their importation from abroad, but the pins there alluded to were much larger than those now in use, and were made of box-wood, bone, or silver.

Pins of English manufacture being in great repute abroad, the demand increased to such a magnitude that in the number currently required in this country daily has been stated at fifteen millions, an estimate which we are inclined to believe considerably below the actual quantity.

The most profitable mode of producing pins by hand labour is by operating on the head and point of a large number of them, actually made in this country daily has been stated at fifteen millions, an estimate which we are inclined to believe considerably below the actual quantity.

The most profitable mode of producing pins by hand labour is by operating on the head and point of a large number of them, and this being done, the workman takes a dozen or more of them at a time in his left hand, while with his right he cuts them up into pieces of two coils each. To prevent them flying off from the shears when separated, the fore-finger of the left hand is applied to the tip of the coil, and the teeth are caught in this manner. In some factories this is performed by a chisel and gage, instead of the shears, and has the advantage of requiring less dexterity. The heads, when cut off, are sheared by being made hot and then thrown into water. When annealed, they are ready to be fixed on the stems. In order to do this, the operator is provided with a small stake, upon which is a fixed steel die, containing a hollow the exact shape of half the stem. A piece of pin's head, and, is being held by a lever, is the corresponding die for the other half of the head, which, when at rest, remains suspended about two inches above the lower one. The workman takes one of the stems between his fingers, and dipping the pointed end into a bowl containing a number of the heads, catches one upon it and slides it to the other end; he then places it in the lower die, and, moving a taddle, draws up the upper one or five times upon the head, which fastens it upon the stem, and also gives it the required figure. There is a small channel leading from the outside to the centre of the dies, to allow room for the stem. The pins are now finished as regards shape, and it only remains to be made the required length. These are boiled in a pickle, either a solution of sulphuret acid or tartar, to remove any dirt or grease, and also to produce a slight roughness upon their surfaces, which facilitates the adhesion of the metal. When this is done, they are washed, and then placed in a copper vessel with a quantity of grain tin and a solution of tartar; in about two hours and a half they are taken out, and after being separated from the undissolved tin by sifting, are again washed; they are then dried by being well shaken in a bag with a quantity of bran, which is afterwards separated by shaking them up and down in open wooden trays, when the pins fly off and leaves the pins perfectly dry and clean.

Papering the pins is the longest operation in pin-manufacture, with the exception of shaping and fastening on the heads. This latter operation consumes four hours, and the former more than two hours of the eight required for making one dozen. The heads are set in their places from the bran, as before described, they are thrown into bowls, with their points in all directions, and before papering it is necessary to arrange them, all the same way. This is done by laying them out in rows between the teeth of which they are caught by the head; they are then placed upon a piece of metal, with as many grooves as there are pins required in a row, and held there by another piece of metal being placed on top of them. These pieces of metal are not quite so broad as the pins are long, so that their points project beyond the edge of the metal. The paper is folded into the required shape, and pressed against the points of the pins, which are then relieved from the holder, and a little tray or box to which they are then fixed. Of these operations, drawing the wire, cutting it into...
lengths, cutting the heads from the coils, and tinning, are performed by men, and the rest by the women and children. On the fixing of the heads on the pins expeditiously and firmly has always been a matter of considerable difficulty, and many means have been resorted to and several machines invented to effect this purpose. Among the machines may be mentioned that of Mr. Rundy, for which a patent was taken out in the year 1869. This machine fixed on the heads on one row of pins at a time, but more was afterwards fastened by one blow, and several pins were operated on at the same time. Since that time several other machines have been invented for forming the head out of the stem of the pin; one of these, in the small part of the head, is cut into a hollow die. A large proportion of the pins now manufactured are made in this way, and are much superior to those made in the old fashion. One objection however has been made to them, which is that to form the head in this manner by pressure, the wire requires to be very soft, and consequently the pins will easily bend. This certain is a great disadvantage. We have seen some pins of which the heads are formed by curling the end of the stem round upon itself and then shaped by being struck in a die, but these would be open to the objection just mentioned. The only method that occurs to us of remedying this fault is to partly produce the head by an operation similar to that of the old style. The stem being half through the plate would be rendered much less liable to bend, and the head being half formed by such operation, but left soft, might be finished in a die as in the present machines. We know of no machinery or method by which such a sort has been tried and therefore we merely throw it out as a suggestion.

We shall conclude by giving a slight sketch of the pin-making machine invented by Mr. Wright, and for which a patent was granted to him in May, 1864.

Motion is given either by manual power or by machinery to a strong axis working in collars. This main axis carries several cams or eccentric wheels which put forward at each revolution many lever ends or slides at right angles to the main axis. These levers return to their former situation as soon as the cam ceases to operate by means of a strong spiral spring attached to each; at the other ends of these slides the different operations are performed.

A coil of brass-wire of the requisite size is placed upon a reel and spindle, and the end is drawn through a set of zigzag pins as before described for straightening the wire, and placed between the teeth of a strong pair of pincers. This is all that is necessary to be done before setting the machinery in motion.

The first slide then moving forward shunts the pincers upon the wire and instantly carries it forward into a nipping-gauge which is sufficient for forming the head and can be regulated by the adjustment of a small screw attached to the first slide.

The piece thus cut off is carried by an ingenious little adaptation called a carrier and next operated upon by a slide of sliding four in number, mounted on a bar at right angles to the working slides and parallel to the main axis; this bar has a motion given to it in the direction of its length, and moves once for every pin-length of wire cut off by the gauge before mentioned. The carriers themselves are made somewhat in the manner of a pair of pliers, the under chap being kept up to the other by a spring. The juncture of these chops is exactly opposite to the pin, which is forced between the chops and carried to the next operation.

The piece of wire is deposited by the first carrier in the centre of a chuck attached to a small mandril, which by a movement prods the pin; the instrument that forms the frame which supports the mandril is tilted so as to bring the point of the pin down upon a revolving steel mill just below it; a lever or finger then presses the end of the wire upon the mill, and at the same instant that the lever carrying the pin is set in motion and the wire ground to a point; the mandril frame then rises, the mandril itself is brought to rest, the pin released, and conveyed by the second carrier to a finer mill, where the point is completed by exactly the same process as before preceding.

It is then taken by the third carrier to the first heading die, where the body of the pin is firmly held while a steel punch advances against the end of the wire, and forcing it into a hole drilled in the head. The last carrier then takes the pin, and placing it in another die, the head is completed by another punch; a small forked lever then draws the finished pin from the die and drops it into a receptacle below. The pins are then tinned in the manner previously described. These operations are carried on by the machine simultaneous and occupies the time of five pins being constantly under operation in the different stages; the machine will produce fifty or sixty pins per minute, and only requires the attendance of one person.

The work is referred to the 9th volume of the London Journal of Art and Science, where he will find a full description of the above machine, illustrated by numerous engravings.

Mourning pins may be made of brass, in the manner above described, wire being substituted for tinning; but those made of steel wire, tempered to a deep purple, are much neater as well as stronger.

PIN MONEY. Gifts by a husband to his wife for the purchase of ornaments or other articles, are frequently called pin-money; and such gifts may either be made during marriage, or, what is the more usual case, a sum of money for that purpose may be secured by the husband to his wife by settlement, or by articles executed before the marriage. Perhaps it is only money secured before marriage for the purpose enumerated that is properly called pin-money; for a gift of money by the husband to the wife after marriage is liable to the husband's private expenditure, and is called pin-money; and the wife is entitled in all cases to such money, and to her savings out of it, and things bought with it.

Several of the questions upon pin-money have arisen after the husband has purchased by such means, and the wife, or her successor, demands the return of the money; and it is the general rule that she can only claim arrears of one year's pin-money if she has been supported by the husband with necessaries during the time that such arrears have accumulated, it being presumed from the fact of arrears accumulating, and her wants in the meantime being supplied, that she has wavered her claim to pin-money; but she may by evidence rebut such presumption. If it is expressed in the settlement or articles that the pin-money is to be given for a particular purpose, (as for the wife's apparel, and it is proved that the husband provided apparel for the wife, she has no claim after his death to any arrears of pin-money.

If the husband leave a legacy to the wife equal to the arrears of pin-money or more, such legacy, according to the general rule as to the satisfaction of debts by the giving of legacies, will be considered as a payment of the arrears due at the time when the will was made. If a wife elopes and live apart from her husband, either in a state of adultery or not, she does not thereby forfeit her right to her pin-money, and she may recover it.

PIN NAY.

PINNA/NO. [Numex].

PINDar, son of Daiphantus (or, as others say, of Pangoras, or Seopelidur or Cidona), was born at Cynocephalae, a village belonging to the Thessalians, in O. 65, 3 (n. c. 518), according to Clinton (Periplus), in O. 64, 3 (n. c. 529), according to Bickh (Pindar, vol. iii., p. 14), and died, according to the former computation, in O. 435, according to the latter in n. c. 442, having completed his eightieth year. He was born at the time of the Pythian games (about the beginning of July: Arnold, Thucy., ii., p. 418), and he speaks himself (frugm. incert. 102) of the festival recurring at the beginning of every other year, at which I was first laid upon the bed in swaddling clothes." His wife was Megaca, daughter of Ly- sitheus and Callinia: he seems also to have been married to a woman named Timoxena: he had a son Daiphantus, and two daughters, Er固定式。This is done in Pindar's family were hereditary flute-players; their profession was of great reputation at Thebes, though flute-playing did not come much into fashion at Athens till after the Persian war. Accordingly he seems to have applied himself at first to that branch of poetry which was particularly adapted to a flute accompaniment, and his first instrument was Lasos of Hermoine, a celebrated didyphantic poet, whose favorite instrument was the flute. (Plutarch, De mus., c. vi., 1-3.) Pausanias the son of Pindar says that his father began to teach him the flute, and finding that his capacity was of a higher order, placed him under Lasos, who initiated him into lyric poetry. It is clear however, from what has been said, that Pindar did not have much to do with the formation of Pindar's style as a lyric poet. It is more probable that Pindar, as is
expressly stated, professed chiefly by the advice and example of Corinna, the Tanagraean poetess, whose odes were of the same mythical character with those of Pindar, and who was not an imitator of the Lesbian school, but a teacher of choruses, like Pindar himself. Pindar, too, tells us (De flor. Athen. c. 4) that Corinna recommended Pindar to introduce mythical narratives into his odes, for that this was the proper business of the poet—the rhythm, music, and ornamented diction being only vehicles of the subject-matter; and that when he had imitated and altered them, the songs of Pindar composed a hymn full of Theban mythology, she remarked with a smile, that ' he ought to sow with the hand, and not with the whole sack' (τ’ χερὶ δὲν εἶναι ἀλλὰ μὴ τὴν ἀγελάδα λύνειν). The story of the pupil in the musical contests, and gained five victories over him (Pausan. ix. 22; Galienus, V.H. xiii. 24), though she found fault with the poetess Myrris for doing the same thing: 'I blame a woman born, should enter into rivalry with Pindar.' (Apollon. Dyscol. De Pronon. p. 64, B.) He had another instructor, Agathocles, or Apollodoros, of Athens, who allowed him to teach the sick or dithyrambic choruses there; while he was a mere boy. Pindar must have commenced at a very early period his career as a professional composer of chorai odes for special occasions. At the age of twenty he composed an Epinician ode in honour of Hippocles, or Hieron, who was the son of the first priest of Zeus at the Pythian games; and this ode, which is still extant (Pyth. x, composed in A.C. 562), exhibits no marks of a want of skill or practice on the part of the author. He soon rose to a higher position, and gained the long life in lucrative intercourse with the tyrants and wealthy men of Greece and its colonies. The free states vied with one another in honouring the great lyric poet, and by the allegro, or complimentary franchise as Athens, Lesbos, and Opus; and although the people of Ceos had two celebrated poets of their own, namely, Simonides and Bacchylides, they employed Pindar to compose a speech to be delivered by an iron chair to sit upon when he sang the Apolline hymn (Pausan. x. 24, sec. 4), and, by order of the Pythian, he received a portion of the banquet of the Thessalian (Euripides, De sacer. Num. Myrris, p. 13.). A long time after his death, and not as the pseudo-Icbetides states, in his lifetime, his statue was erected at Athens (εἰς τὴν βασιλείαν σαν). He was courted by Hiero, tyrant of Syracuse; by Theron, tyrant of Argos, and Thasos; by Arcesilaus IV., king of Cyrene; by Thoras, one of the Aleuadse; and by Alexander, the son of Amyntias, king of Macedon, who was an active patron of lyric poetry. Thus in Olympia, when he had reached, from the nature of his employment, was very religious, or, rather, very observant of particular superstitions. He had consecrated a temple to the Magna Mater and Pan near his own house, and he was the first to resort to the praiseworthy practice of having a hereditary flute-player, for the Magna Mater and Pan were Pyrignian deities, in whose honour the first flute-music was composed. He also dedicated statues to Jupiter Ammon, and to Mercury of the Aegae, and also perhaps to Apollo Belidromius.

The entire specimens of Pindar's works which have come down to us (with the exception of the 11th Nemean), belong to one class, the official ones, of the Epinician or triumphal odes. Besides these however Pindar wrote dithyrambs, Rams, dirges, drinking songs, mimic dancing songs (τοιχομαχίαι), songs of maidens (φαρδείας), and epic or panegyres on princes, of which a few Fragments remain. He occasionally mentions the various kinds of poetry which Pindar cultivated in the following order (Carm., iv. 2):—

Sec pro aedes nostri dithyranbutos (the cyclic chorus)
Verba derutvria
Sec pro aedes nostri Deorum
Sangulism (the hymns).
Sive, sive Eos chorus reducit
Palina celerant (the Epinician ode).
Sec pro aedes nostri satyri
Sec pro aedes nostri parviphantes (the dirges).

From which we may infer that Pindar was not regarded by the antient as pre-eminently or exclusively a composer of Epinician odes. On the contrary, it is likely that Pindar was no less eminent as a Muse instrumental and poet of the di-thyramb, which is placed first by Horace, was his favourite style of composition. We have still a very beautiful fragment of a dithyramb by Pindar; and if the others were like it, we may well regret the loss which we have sustained. As however all Pindar's most important and admired works are all the one exception just mentioned, of an ode composed for the celebration of a Pyrrhus at Tenedos) were composed for the celebration of some victory in the public games, we must be content to form our judgment of his poetical power from these specimens, and in this spirit we may see whether his peculiar nature of the occasion for which they were composed, for it was this which gave the ode itself the particular character by which it was distinguished. An Epinician ode is usually composed for the celebration of a military victory, may be performed at the games, either by the speed of horses, by strength of body, by skill in gymnastic exercises, or by proficiency in music. Along with the victor's name the herald proclaimed that of his native city, which was considered to derive great renown from the achievement of its citizen. The games themselves being a religious institution, it is obvious that the celebration of the victory must also have had something of a religious character. It was in fact a mixture of the solemnities of religious worship with the joy and revelry of the sports, a mixture very common among the Greeks, whose sacrifices to the gods were only a constituent part of the banquet. The victor either went in procession to the altar of the god of the games, there to perform the public song, as at the Olympic games, but in the contest, accompanied by a comus, which sang the κακοπέδον of Archelochus, or an ode composed for the occasion by some other poet; or he celebrated his victory on his return to his native city, before a public banquet; a chorus, a speech, a banquet, and a comus. The poet praised both the victor himself, and his native city: the victor was praised either for his wealth (άσχηcm), as in the case of the horse-race, if it was only the wealthy who could contend for this prize, as Pindar himself says; or for his valour (αλήθη), if he had been exposed to any danger in the contest. The city of the victor is generally praised with some reference to the mythological legends of the city or its hero. The victor has always formed the chief part of Pindar's odes, and it is allowed to run into every sort of digression, not however at random, but with some fixed purpose, which we have generally noted in our Introduction. Although the Epinician odes were performed by a chorus, the poet is always considered to speak in his own person. He avails himself of this, to deliver advice to the victor whose praise he is singing; to defend himself against the calumnies of his enemies; to criticise and depreciate rival poets, such as Simonides and Bacchylides; and sometimes even to address the person whom he employed as his σύμμενον when his own absence prevented him from teaching the chorus. Thus in Olympia, when he had reached, from the nature of his employment, was very religious, or, rather, very observant of particular superstitions. He had consecrated a temple to the Magna Mater and Pan near his own house, and he was the first to resort to the praiseworthy practice of having a hereditary flute-player, for the Magna Mater and Pan were Pyrignian deities, in whose honour the first flute-music was composed. He also dedicated statues to Jupiter Ammon, and to Mercury of the Aegae, and also perhaps to Apollo Belidromius.
the loud-booming flute as much as to the tranquil melodies of the harp; and the rhythms were Holian, or Lydian, as often as Doric.

The best edition of Pindar is that by August Bockh, Lipsiae, 1811, 1821, 3 vols. The sound criticism which Bockh has applied to the text of the author, and his comprehensive and masterly explanations, have thrown an entirely new light upon the music, metre, lyric poetry, &c. of the Greeks. Ludolf Dissen, who wrote the explanations to the first volume of Bockh's edition, and subsequently (1830) published a smaller edition, which may be considered as an abridgment of Bockh's. As an explanatory edition it is a very good one; but as the fragments are not printed in the order of their composition, it cannot be considered for its predecessor. There is a very good translation of Pindar into English verse by the Rev. H. F. Cary (London, 1833), which would be still better if the translator had, like Bockh and Dissen for his guide instead of Heyne. The translations by West and Moore are very inferior to Cary's, as representatives of the sense of the original, though there is much of taste and vigour in those of the latter author.

PINDEMONTE, IPPOLITO, born at Verona, in 1753, was a younger son of a patrician family of Verona. His elder brother, Giovanni Pindemonte, wrote some tragedies, and a History of Venice, which were much esteemed in his time. Ippolito studied at the college of Este, and afterwards at Modena. On completing his studies, he travelled through Europe, and visited France, Germany, Holland, and England, of which last country he speaks in his verses with a warm-heartedness that induced him to give up active life and retire to the country. He fixed his residence at Avesa near Verona, where he wrote his 'Prose e Poesie Campesi,' published first in 1784, and often reprinted since. The philosophy of his work, the warm-heartedness of his character, the amiability of his disposition, and his great accomplishments, contributed as much as his writings to mark him as one of the most distinguished Italians of his age. A monument has been raised to his memory by his townsmen of Verona.

PINDUS. [Greece.]

PINE-APPLE, the fruit of the Ananas sativa, Linnd, a tropical plant, indigenous to South America and some of the West India Islands. It has become so perfectly naturalised in many parts of the hot regions of Asia and Africa, that it has been thought to be likewise a native of those countries. When the British troops invaded Brama, they were supplied by the natives with the famous physick plant, and brought to this country in 1690, by the earl of Portland, according to the Sloanean MSS. in the British Museum. There is a painting, formerly in the collection of Horace Walpole, in which Charles II. is represented as being presented with this curious present by a Venetian merchant, who some doubts whether that fruit was grown in England or obtained from Holland. It may however be fairly concluded that pine-apples were exceedingly rare in this country, even in the time of the author, and in the beginning of the last century; for in 1716, Lady Mary Wortley Montagu remarks that pine-apples were on the electoral table at Hanover when she was there in that year, on her journey to Constantinople; and she states that she had never previously seen that species of fruit. (Letters of Lady M. W. Montagu.)

Since that period the cultivation of the pine-apple has been prosecuted with perseverance in Britain, but frequently the results have been very disproportionate to the expense incurred. Within the last twenty years however, success has been more general; and in many instances a surprising degree of perfection has been attained, much greater interest being taken in the trade, and the plant being contended with an extra-tropical climate, for instances are on record of pine-apples weighing 13lbs. and 14lbs. availablos, and from 7lbs. to 8lbs. is by no means an uncommon weight for a single fruit. At the present day the pine-apple in England is so abundantly produced, it is a very common fruit. Its delicious flavour, and the noble appearance which a well-grown fruit exhibits, render the cultivation of it a special object of horticultural enterprise and skill.

As, notwithstanding the many treaties that have been written on the subject, failures in the production of pine fruit continue to occur, it seems desirable to point out in what they may be, either in the nature of the species itself, or in the management of the growing in两国的农业。
It has been already stated that this plant is an inhabitant of the tropics, and it may be added, near the level of the sea. The latter circumstance it is necessary to remark, because if it were a mountain plant, even though tropical, it might be natural for it to endure a comparatively low degree of temperature. But according to Boyerich (Gardener's Magazine, v. 4. 42), 'the pine-apple in its wild state is found near the sea-shore, the sand accumulated there in downa serving for its growth, as well as for that of most of the species of the same family. The place where the best pine-apple is usually noticed is in the vicinity of the plains of Praya Velha and Praya Grande, formed by the receding of the sea, and in which no other plant will thrive, are the spots where the pine-apple grows best.' The temperature varies but little throughout the year; for instance, the mean temperature of the warmest month at Cumana, 10° 27' N., is, according to Humboldt, 84°38', and that of the coldest 72°16'. At Havana, on the skirt of the tropics, the mean temperature of the warmest month is 83°84'; that of the coldest 69°98'.

At Vera Cruz the mean temperatures of the warmest and coldest months are respectively 81°96' and 71°06'. In conformity with the above, and also from the results of experience, it may be stated that the artificial temperature of the atmosphere in which the pine-apple is intended to be grown should have a mean of about 80'; or a minimum not lower than 75° at any time of the year, and a maximum not higher than 90° in the hottest month. If, then, we compare the coldest months of our days in winter, there is a deficiency of light, and when forcing the plant in its absence would produce only imperfectly formed tissue, 70° will be proper. In summer 90° may be too much heat for the pine-apple, but 85° will not be too much. The maximum by sun-heat may extend higher, but 100° should be its limit.

With regard to bottom-heat, it should be in imitation of the state of nature. With the latter in mind, it will be seen that the temperature of a tropical atmosphere. The mean temperature of the earth is generally supposed to be somewhat higher than the mean of the atmosphere, owing to the great moisture of the former. The difference may be supposed not to exceed, perhaps, 5°. The discrepancy however cannot be great; and if the mean atmospheric temperature at the equator be from 80° to 84°, as has been ascertained from numerous observations, the temperature of the earth, it may be presumed, will not average lower; nor will it be many degrees higher where moisture sufficient for vegetation exists, as is generally the case in islands; although on continents it becomes so great as to render the soil to a desert. The temperature of the earth for some months of the year is about 95° during summer, according to a corresponding Mr. Hay (Gard. Magz.), and this degree of heat will be found a very good medium for the roots of the pine-apple. Bottom-heat then should never be allowed to fall below 75°, nor risse higher than 90°.

The soil for pine-apples requires to be rich. A fresh yellow loam, strong, but by no means of a binding nature, with which is mixed a quantity of cow-dung, will answer very well. The pots require to be well drained, and over the drainage some pieces of turf may be placed. Manure-water, made by steeping sheep's dung or cow-dung, is occasionally applied, care being taken that it be properly diluted. If the plants are found not to be thriving, they may be shifted, without hesitation, at any period of their growth.

It is very important that a perfect drainage be at all times maintained. When pots are plunged too deep, the roots are apt to close the bottom of the pot by their secretions; or a stoppage may occur in consequence of the pressure of the pot upon the tap when it wastes and becomes capable of being rendered compact. From whatever cause the defect proceeds, it can only be remedied by simply plunging an empty pot, with its mouth downwards, and on this placing the bottom of that containing the plant, closing the tap round the sides of the latter in the usual manner. But if the pot be nearly full and the bottom may be partially removed from the sides of the pot.

Moisture is essential for the growth of the pine-apple. The condition of the soil in the pots will of course indicate whether or not no discrimination should be made. But whether the atmosphere should be kept moist by spraying, particularly before shutting up at night. No water should on any account be used of a temperature many degrees lower than that of the soil in the pots where the plants are growing; it should not, in short, be applied lower than 75°, and 80° will prove a good medium. When the fruit is ripening, the moisture of the soil should be withheld; and in damp cloudy weather in winter, if it is found necessary to retain rather than promote growth, they should be kept rather dry than otherwise. Moisture will not prove injurious when it is accompanied by a sufficiently high temperature and a due share of light. The model of hot-water pipes is undoubtedly the best for pine-stoves; and steam from the boiler should be at command, so that it may be introduced into the interior of the house as occasion requires.

Pine-apples may be grown under various modes of treatment. Instead of being confined in pots, they are sometimes planted in a bed of soil. This has been found to answer very well where the drainage was secured, and where a proper degree of bottom-heat could be applied. They have also been grown in pots placed on shelves or on sand; this mode however has not proved fully successful, for the roots are subjected to a vicissitude consequent not only upon the variations in the temperature of the atmosphere of the house, but also its hygrometrical conditions.

A principal cause of failure in the cultivation of the pine-apple appears to have arisen from the idea that the plants will bear a much lower degree of temperature than above pointed out as being natural to them. They will apparently so do; but although the plants may continue to bear a healthy appearance, yet experience proves that their vital energy is much lessened, and with this diminution of temperature, as is continually indicated by the fruitistem being sent up with only a few imperfect pips. The stagnation of water about the roots from defect of drainage, and the too great or too much heat and dryness, or checking the plants by cold in order to bring them to a fruiting condition, instead of forwarding them naturally to that state, are other sources of failure on the part of culture. As to the last, it ought to be taken to bring on the time of fruiting is to inspissate the sap, and to augment the amount of secretions by gradually withholding moisture and increasing the temperature of the air. This is the course that should be pursued; and after this, by the sudden application of a brisk temperature with more moisture.

To richly manured soil the large size of the pine-apples produced in England may be attributed; and to the means that cultivation under glass affords of progressively inspissating the juices towards the period of ripening, may be ascribed the superiority of the fruit to that produced in countries where the plants are indigenous, as was alluded to under Avancé (Fruits and Mode of Culture).

The varieties of the pine-apple are numerous; the best however have been already enumerated [Fruitra]; and full descriptions of upwards of fifty varieties may be referred to in the Trans. Hortic., and other works. The following gives an outline of all the principal varieties in the Guide to the Orchard and Kitchen-Garden.

**PINE TREE.** [Pinus]

**PINEAPPLE (P. CRAN-**

**PINELEA, JUAN DE, born at Seville, in 1557, entered the order of St. Francis, and not of the Jesuits, as stated in the 'Biographie Universelle.' He acquired a great reputation for general erudition, especially in the Greek, Hebrew, and Oriental languages. On being appointed counsellor to the court of the Inquisition, he was commissioned to visit the principal libraries of Spain, in order to register those works which might be objectionable to the Roman Catholic religion. The result of his inquiry was an 'Index novus Librorum Prohibitorum,' Seville, 1631, published by order of Cardinal Zapata, grand-inquisitor of Spain. Pineda published a version of Theodore Pelt's 'Catena Graecorum Patrum in Proverbia Salomonis.' He also published the 'Historia de los Indios de Mexico' in 6 fol. vols., Madrid, 1597; 2, 'Salomo Pravitus, aue de Rebus Salomonis Regis,' libri octo, Lyon, 1609; 3, 'Commentarii in Ecclesiasten,' Antwerp, 1620; 4, 'Monarcha Islamae, o Historia Universal del Mundo desde su Creacion hasta estos Tiempos,' 5 vols. fol., Barcelona, 1620. This work is a universal history of the world in 30 books, and is written with some display of erudition and imagination. He died in 1623. As an inquisitor, it seems that the Spaniards had no universal history in their language, and Pineda undertook to supply the deficiency.

**PINEROLO.** [Pierpont]

**PINGRE, ALEXANDER WILLIAM, was born at
PIN

PIN

Paris, 4th of September, 1711, and educated in a religious
establishment at Senlis. At the age of twenty-four he was
appointed professor of theology, but during the persecution
of the Jansenists he was deprived of his situation by the
Government, for some years after which he gained a livelihood
by teaching the elements of grammar in an obscure college.
Disgusted with his theological career, at the age of thirty-eight years or thereabouts, he began the study of
astronomy, and his friend Lecat, a celebrated physician of
his acquaintance after retirement to Rouen, the department of astronomy in that establishment
was placed under Pintré's direction. His observation of the
transit of Mercury, on the 5th of May, 1753, led to his
being named in the correspondence of the Academy of
Science, of which he, in 1756, was elected a free associate.
About this time also he was appointed chancellor of the university of
Paris, and librarian of the abbey of Sainte Genevieve, on
the summit of which building a small observatory was erected
for his use. In connection with Lecomte he computed a nautical almanac, called the 'Riut du Ciel,' for the
years 1754-7. In this work his chief object was to
render an essential service to the mariner by supplying the
means of determining longitude, which he purposed
to deduce from the moon's hour angle by the aid of
tables computed by himself with very great labour. The
method however inspired little confidence, and was shortly
abandoned, by order of the authorities of Paris, and now in general use, in which the longitude is deduced from
the observed distance of the moon from a known star or
planet.

In 1760 Pintré, by order of the government, sailed for
the island of Rodrig, in the Indian sea, in order to observe the
transit of Venus, which took place on the 6th of June of the ensuing year. The ultimate object was the determination of the
sun's parallax, which Pintré, from his own observations,
desired to be about 10', but in later years his calculation
was found erroneous. The same phenomenon was
observed by him at the island of St. Domingo in 1769,
during one of four voyages undertaken by him to try the
correctness of the method and Leonard. He
was killed at Paris, 1st of May, 1766. The memoirs
contribution by him to the Transactions of the Academy of
Sciences consist chiefly of accounts of his observations, and
will be found between the years 1753 and 1770. Of
published works the only one to which the least interest is
now attached is his ' Comptographie, or an Historical and
Theoretical Treatise on Comets,' Paris, 1763, 2 vols. 4to.
Besides a very complete account of all that was then known
concerning the nature and motions of comets, it contains the
elements of no less than eighty orbits computed by himself.
The readiness with which he engaged in the most laborious
calculations and most prominent point in his character.
Lacaille had computed, for the 'Art de vérifier les Dates,' a table of the
eclipses visible in Europe during the first eighteen centuries of
the Christian era. Pintré, without any obvious motive,
repeated the whole of the working, adding however a list
of the eclipses during the ten centuries preceding. He had
also reduced a very large number of observations of dif
ferent astronomers, beginning with Tycho Brahe, for a
work which he intended to call the 'History of Astronomy
during the Seventeenth Century.' Several sheets of the
work were printed, when further progress was suspended by the
depreciation of the assigns, and the publication has not been
likely to be continued.

(Delambre, Biographie Univ.; Mémoires of the French
Institute, 1790; Notice of Pintré, by M. Prony.)

PINIC ACID. This acid is obtained, according to Unver
dorben, by the distillation of phennolic, or terephatic acid, in cold
alcohol of specific gravity 0·823. The solution obtained is to
be mixed with one of acetate of copper in alcohol, and there
is then precipitated a combination of oxide of copper with
phennolic. This is washed with alcohol and distilled in a
mixture of alcohol and hydrochloric acid, yields
a solution from which water throws down pinic acid. The
pinates of ammonia, potash, and soda are soluble in water,
but these bases are insoluble in it; they are generally dissolved by either, but not water; When pinic acid is washed and boiled in water, it forms
on cooling a hard brittle substance, which becomes brown by
fusing, and passes into what Unverdorben calls colophonic acid.

PINITE, a mineral which occurs in imbedded crystals. Primary form a rhombohed, but generally found in hexagonal prisms. Cleavage parallel to the lateral faces of the prism. Fracture indistinct, uneven. Hardness, scratches gypseum, is scratched by flour spar. Colour reddish, greyish, and greyish-red. Lustr slightly resinous. Opague. Specific gravity 2·97 to 3·08.

Before the blow-pipe on charcoal it whitens, fuses on the
edges, and yields a white glass with bubbles; with borax it fuses with difficulty into a transparent glass, coloured by iron. The name comes from its likeness to felspar.

It is found in Saxony, France, England, in some other parts of Europe, and in North America. According to Gmelin, the pinite of St. Pardoux in France consists of 28·88 alumina, 23·480; potash, 7·859; soda, 0·366; peroxide of iron, 5·0552; magnesia, 3·760; water with animal matter, 1·410; total, 100·006 PINK. [Carnation.]

PINKERTON, JOHN, was born at Edinburgh in 1738, and was the third and youngest son of James Pinkerton. After finishing his school education, he was articled to a writer to the signet, in whose office he spent five years; but it does not appear that he ever engaged in the practice of law. In 1763-4 he published an account of the
'Egyptian Wall, and the Cities on the Nile,' which was so well received as to lead him to
continue his geographical and archaeological investigations. In 1768-72 he had published 'Two Dithymbic Odes on Enthusiasm and Laughter,' in a sixpenny quart pamphlet, and soon after another original volume of the same form, entitled 'Tales and Songs,' in 12 vols. 8vo, a work of considerable merit for the time, though now of little use, but in which Pinkerton is stated to have been much indebted to the assistance of the late Mr. Douce and another friend. It has been twice reprinted since with improvements.

In 1785 he came to the world, under the nom de guerre of Robert Heron, an octavo volume of 'Letters on Literature,' in which some singular opinions on the value of the Greek and Roman writers were entertained, but is now more glaring by a new and very strong system of spelling, in which however the inventor had the good sense not to persevere after it had answered its temporary purp use. In 1789 a judicious Pinkerton the acquaintance of Horace Walpole, and through him of the distinguished literary characters. His next publication was one which has retained its interest and value, the 'Antient Scotch Poems, never before in print, from the MS. collec
tions of Sir Richard Maitland of Lethington, Knight. 4 vols. 8vo, London, 1786. It is a mistake to describe this work as a literary forgery, as it sometimes been done; the poems from the Maitland and Banntayne MSS., of which it consists, are genuine. [Maitland, Sir Richard.] It is here however, in a * List of all the Scotch Poets, with brief Remarks,* that he makes his confession of the forgery of several pieces in the previous collection. When he prepared that former work, between the years 1770 and 1780, he had only eighteenth century MSS. in his possession (in MS., it seems, before it was published): 'as for the secret,' he continues, 'he observed the Horatian precept he had at first laid down to himself, nonum prematur in annum'; and notes that as the friends and the public for keeping it to himself. The fiction, as the publisher can infer, could not possibly have any sortid view, as the MS. was presented to him, and one half of the future profits, which was advanced, was refused. For the imposition, it was only meant to give him the necessary assistance to the public; and the method adopted by no one ever knew where the name was unknown. As to the vanity or pleasure of imposing on others, if there be such ideas, they are quite unknown to the editor. Perhaps, like a very young man, when he was first in the world, 'he thought a little too far; but he always thought that novel and poetry had no bounds of fiction.' What has been called the cool impudence of this ingenious sovall has perhaps carried forth more indignation than it deserves from some of the many quarters where Pinkerton has made himself an object of
aversion by certain peculiarities of his writings and character.

In 1787, besides a compilation in 2 vols. 12mo., entitled 'The Treasury of Wit,' which he published under the name of Bennet, he produced the first edition of his 'Dissertation on the Etymology of the Land' or Goths,' 8vo., a work which, whatever may be thought of some of the conclusions at which he arrives, is full both of ingenuity and of various and accurate learning, and must be admitted to be a most creditable performance for a young man under thirty. Here he first established a strong anti-Celtic feeling, which colours all his historical and antiquarian disquisitions, and which made him so many enemies. This publication was followed in 1789 by a collection of 'Lives of Scottish Saint, and Traditions of Bard.' Of his poem of 'The Bruce,' 3 vols. 8vo.; and by one of his most important works, 'An Enquiry into the History of Scotland, preceding the reign of Malcolm III.' 2 vols. 8vo. (with the Dissertation on the Goths appended). This inquiry (which was reprinted, along with the Dissertation, in 1794, and again in 1814,) with all the perversity or want of judgment on some points by which it may be thought to be disfigured, is still one of the ablest and most valuable works ever possessed on the subjects to which it relates, and would be indispensable to the student of Scottish antiquities, were it only for the many curious documents it contains, all rare, and some of them nowhere else extant in a printed form. It was succeeded by 'The Medallie Historie of Scotland, from the Reformation to the Revolution,' 4to. 1790; 'Scotic Poems,' reprinted from scarce editions, 3 vols. 8vo., 1793; 'Iconography Scotia, or Portraits of Illustrious Persons of Scotland, with Biographical Observations,' 2 vols. 1792-1793; and 'The History of Scoland, from the Accession of the House of Stuart to that of Mary,' 2 vols. 4to., 1797, another work of original research and great importance, although most repulsively written, from an unfortunate fancy of imitating Gibbon which had taken possession of the author, to the destruction of his own natural style, which, if not in other respects very happy, was at least plain and unaffected, and occasionally not without a little livable vivacity. Prefixed to this work is a portrait of the author, with a few specimens of his handwriting, written by his books, with an inscription which takes care to inform us that he was as yet only in his thirty-eighth year. And he was certainly entitled to take to himself the credit of a most respectable amount of literary performance for that age. After the death of his friend the Earl of Orford, in 1797, Pinkerton communicated notes of his conversation in a series of letters to the ' Monthly Magazine,' which he afterwards collected and published along with a memoir of Walpole, in 2 vols. 12mo., under the title of 'Walpoliana.' His next publication was 'The Scottish Gallery, or Portraits of Eminent Persons of Scotland, with their Characters,' 8vo., 1799. In 1802 appeared the first edition of his 'Modern Tracts on Geography, digested on a new plan,' in 2 vols. 4to., a second edition of which, extending to 3 vols., was brought out in 1807. There is also an abridgement of this work, in 1 vol. 1802 Pinkerton left England, and for the rest of his life resided chiefly in Paris, continuing however to give occupation to the press of his native country with his usual industry. Two thick but not very well filled octavos, entitled 'Recollections of Paris in the Years 1802-3-4-5,' which he published at London in 1806, exposed him to much ridicule by the Frenchified style of thinking and air of petit-maitreship affected by the quondam laborious antiquary. Returning however to his proper bent, he commenced in 1808 his great work entitled and published along with a memoir of at length completed in 16 vols. 4to. in 1813. This was accompanied by a 'New Modern Atlas,' published in parts, which was begun in 1809 and finished in 1813; and while occupied with this he published two other works also 'Petrolagy, or a Treatise on Rocks,' which appeared in 2 vols. 8vo., in 1811, and was his last original work. He died at Paris on the 10th of March, 1826, leaving a widow, a sister of Dr. Burgess, the late bishop of Salisbury, from whom however the author obtained no assistance. The above detailed of his literary labours is evidence sufficient that Pinkerton was no ordinary man; and his best performances, such as his Dissertation, his Enquiry, his History, and his edition of the Old and New Testaments, are with all his faults, not only all overflow with curious learning and research, but bear upon them the impression of a vigorous, an ingenuous, and even an original mind. His violence and dogmatism, his arrogance and self-conceit, his pugnacity and contempt for all who dissented from his views, and above all his shallow and petulant attacks upon the common creed in religion and morality, have received a general prejudice against Pinkerton, which has prevented justice being done to his acquirements and talents, and the real value of much that he has written. Two octavo volumes of his correspondence were published in 1839, the contents of which however are of not much interest.

PINNA MARINA. [MYTILIDÆ, VOL. XVI., P. 56.]
PINNOOTHERES. [PINNOOTHERES.] PINNOOTHERANS, a tribe of the third family of the Brachyurus Crustacea (Catametopes), according to the arrangement of M. Milne Edwards.

The Pinnootherans are small crustaceans whose carapace is nearly circular, and whose teguments exhibit considerable softness. Their eyes are in general very small, and the disposition of their front and their antennæ varies, as also their external jaw-feet, which present remarkable anomalies. Their feet are short or of moderate length, and are in general very weak. The abdomen of the male is much narrower at its base than the corresponding part of the sternal plastron.

But it is the singular habits of these crustaceans which especially demand attention, for they ordinarily are housed between the mantle-lobes of certain conchifers—Mytilus, Pinnna, Macra, &c. for example. M. Milne Edwards arranges in this small group the genera Pinnothera, Pinna, Didot, Mytilopsis, Hymenaroma, and Elamos; but he acknowledges that this tribe is not so natural as might be wished, and that hereafter perhaps the necessity for subdividing it may arise.

Pinnotherees. (Laterelle.)

Generic Character.—Body circular and rounded above; front not slenderer in the epistome; eyes very small, orbit nearly circular; internal antennæ of the ordinary form, and the fossets which lodge them scarcely separated from each other; external antennæ short, occupying the internal annuli of the orbit. Buccal style is very wide, bordered, and describing a semicircle forwards. External jaw-feet placed very obliquely; their enlarged and valvular portion is formed entirely by their third joint, which is very large, whilst the second is rudimentary; the fourth joint is inserted at the summit of the preceding, and the fifth, which is tolerably developed, is articulated with the sixth by the middle of its internal border, so that it is placed nearly like the thumb of the didactylous claws. The sternal plastron is very wide, and, in the male, the apertures of the organs of generation occupy its last segment. The feet are moderate. The abdomen of the male is small, whilst that of the female is ordinarily very convex, and much larger than the sternal plastron. (Milne Edwards.)

View of the under side of the upper part of Pinnotheres, eyes, jaw-feet, &c. seen from below and magnified. (M. Edwards.)

Before we lay before our readers examples of this curious crustacean, it is necessary to refer them to Mr. Thompson's interesting 'Memoir on the Metamorphoses and Natural History of the Pooe Crab' (Entom. Mag., No. xl.), whence it appears that Pinnotherees, in the earlier stages of its existence, has a very elongated body, which is terminated by a fin, the carapace armed with three spiniform prolongations, very large eyes and nataly feet; in short that it then bears the greatest resemblance to Zozomia. Some of these curious forms have also been known to the antinata, who were not ignorant of their connexion with the Pinnae. The Greeks named them Πεννοθρής (Pinnotherees) and Πεννοθάλασσα (Pinnothaphysis). (Ariz., Hist. Anim., v., xxv.) Oppian (Hae-nes, l., line 186, & seq.) treats the connexion as a sort of partnership for the sake of the shell of Pinnus. (Nat. Hist., i., xxx., &c.)

Pinnotherees, of whom we have here done but a sketch, belongs to a natural family, and the name Pinnus, as applied to the crab which resides in the shell of the Pinna.
Among the moderns Haeckel has given one of the best accounts of the habits of the genus. In a letter to Linnaeus, dated 'Smyrna, December 16, 1749,' he says, 'The time I have been here has afforded me an opportunity of seeing the kinds of fish and shell-fish the Greeks use in their diet. I believe no people make so much use of shell-fish and other sea animals as the Greeks do. I have seen them eat ten different sorts of shell-fish (crabs, prawns, and shrimps are not included), being reaped by Linnaeus under the name of P. lanetii, when with us oysters only are eaten. Amongst others they sell here a Cepa (Cuttle-fish), which by them is called Sepia; it has only eight tentacula, all of equal length; the whole animal is a foot long, and thick in the body. The Greeks have related to me an anecdote, which I think remarkable. The Pinna muricata, or great Slit muscle, is here found in the bottom of the sea in large quantities, being a foot long. The Sepia or cuttle-fish with eight arms, watches the opportunity, when the muscle opens her shell, to creep in and devour her; but a little crab, which has scarcely any shell, or has at least only a very thin one, lodges constantly in this shell-fish; she pays a good rent by saving the life of her landlord, for she keeps a constant look out through the aperture of the shell, and on seeing the enemy approach, she begins to stir, when the wire (for so the Greeks call the shell) shuts up her house, and the rapacious animal is excluded. I saw this shell-fish first at the island of Milo, and found such a little crab in all I opened: I wondered not a little what was her business there; but when I came here, I was first informed of it by the secretary of our consul, Mr. Justi, a curious and ingenious man, who has travelled much, and has lived long in this place. This was afterwards confirmed by several Greeks, who daily catch and eat both these animals.

M. Milne Edwards remarks that the distinction of the species of this genus is difficult, insasmuch as the principal differences to be remarked in the greater part of them do not exist in both sexes, and are often of the nature of those which are modified by age.

We select as examples Pinnotheres Pismum, the Pro-crab, and Pinnotheres veternum, Pinnotheres of the antients.

Description of Pinnotheres Pismum.

Quadruped projecting in the male, not reaching beyond the curved line formed by the anterior part of the carapace in the female. Inferior border of the hands ciliated. Abdomen of the female circular; that of the male having the last joint less than the penultimate. Length: female, 4 lines; male, 2 lines.

Locality.—Very common in Mytilus edulis on the coasts of England and France. [Leach, Malac. Brit., t. 14, f. 5, 3 (female); P. varians of the same work, t. 14, f. 10 and 11 (male); P. laterellis of the same work, t. 14, f. 7 and 8 (young female).] (M. Edwards.)

M. Milne Edwards is of opinion that Pinnotheres Cranch, Leach (Malac. t. 14, f. 4, 9), does not differ specifically from Pismum.

Description of Pinnotheres veternum.

General form the same as in the preceding species. A small spines on the lower border of the right manus in the female. The abdomen of the female is oval; but this particularity may disappear with age. Length of the female, 8 lines.

Locality.—Found in Ph вне on the coasts of Italy, &c.

Pinnotheres veternum.

Elamaon. (M. Edwards.)

Found on Hymenosoma Malthii, figured by M. Rüppell, in his work on the 'Crustaces of the Red Sea,' and separated from that genus by M. Milne Edwards, who thinks that it seems to establish the passage between the Hymenosoma, the Ceratomes, and the Ophryomnes.

Carapace nearly triangular, plain above, and extremely flattened. The whole body nearly lamellar. Front large, very much advanced, and assuming the form of a small lamellar nearly-horizontal rostrum, below which the eyes are hidden; these last organs are of moderate size and not lodged in oridinary cavities; they are free under the front and are applied back backwards against the pterygostomian region. The external antennae are separated from each other by a small vertical plate of the lower surface of the front; their basilar joint is very small, and their posterior joint is broad, the external pterygostomian reaches beyond the ocular peduncles. The external antennae are very small, and cylindrical from their base; they spring below the ocular peduncles, and do not reach the edge of the front. The epistomes, instead of being hardly raised in the middle, are almost straight, and are level with the front of the carapace. The Abdomen is square. The buccal frame is small, quadrilateral, and entirely occupied by the external jaw-feet, whose third joint is nearly square, and is truncated at its anterior and internal angle, for the insertion of the succeeding joint, which is completely exposed. The internal plastron is much wider than it is long. The feet are all slender, filiform, and long; those of the first pair are terminated by pincers, which are convex at the end and hollowed out into a spoon-shape; the succeeding feet end in a lamellar and slightly falciform joint. The abdomen of the female is very large.

(M. Edwards.)

M. Milne Edwards remarks that this crustacean is nearly allied to the Inachoidae, and ought probably to be approximated to them; but not having had an opportunity of examining a male individual, and being consequently ignorant of the disposition of the male intromittent organs, he has hesitated in applying this moniker to the Hymenosoma, of which it has hitherto formed a part.

Example, Elamaon Mathes (Rüppell, Krabben, p. v., f. 16).—Description.—Carapace smooth, very white behind, rounded on the sides, and gradually narrowed up to the rostrum, which is a little elevated; its edges furnished with a kind of horizontal crest, which is extremely delicate, and irregularly cut off as it went. Second pair of feet longest, being nearly thrice the length of the carapace. Length four lines.

Locality.—The Isle of France and the Red Sea.

Hymenosoma. (Leach.)

Generic Character.—Carapace very much flattened above, and nearly circular; the front very narrow and inclined. Orbit very small, and nearly circular, and the eyes must be bent back downwards rather than outwards to be hidden in them. The anterior fossitis are longitudinal, and continued without interruption with the orbit; the stem of the internal antennae is large. The external antennae are inserted near the external angle of the orbit, and are more elongated than in the greater part of the Brachyura. The epistome is hardly distinct, and is hidden by the jaw-feet. The buccal frame has the form of a long square, and its borders are very projecting, and terminate at the external angle of the orbit. The external jaw-feet are long and narrow; their third joint is much longer than the second, and carries the succeeding joint at its anterior extremity. The internal plastron is circular. The anterior feet are moderate, and the third pair are the longest; the tarsi are slender and styliform. The abdomen of the male is very small, only reaching to the level of the third pair feet.

(M. Edwards.)

M. Milne Edwards remarks that hitherto this genus has been arranged in the neighbourhood of the Inach, principally on account of its narrow and pointed front; but its natural position appears to him to be in the family of the Calamitopes, for it is to this type that it approaches in all the important points of its organization. Moreover, as in the greater part of the crustaceans, the abdomen of the male is much narrower than the posterior border of the internal plastron, and the apertures of the generative apparatus are formed in that buckle, instead of being situated, as ordinarily, on the basilar joint of the posterior feet.

Example, Hymenosoma orbicularis.

Description.—Carapace marked above with a large circular and smooth impression; slightly smaller one on the sides. Two spiniform teeth on each side of the epistome, one formed by the anterior extremity of the lateral border of the buccal frame, the other by the external oribitary angle. Size: 6 mm. Length one inch.

Locality.—The Cape of Good Hope.
Generic Character.—Carapace extremely delicate, nearly circular, and very convex above. Front disposed nearly as in the Ocyopodes [Ocyopodians]; but the eyes, which are short and stout, have no orbital cavity for concealment, and always remain projecting. The internal antennae are very small, and placed as in the Ocyopodes; the external antennae are the longest. The disposition of the mouth is very remarkable. The external jaw-feet, instead of applying themselves horizontally to the buccal frame, remain nearly vertical, and form by their union a short and wide reversed cone, whose summit, directed downwards, is open and furnished with hairs; their lamellar portion (formed by the second and third joint) is very wide, and carries the succeeding joint at its anterior extremity; in front of the apophysis, situated at the base of these jaw-feet, and directed below for the support of the flagrum, the carapace presents a great notch, so that the afferent aperture of the respiratory apparatus is always gaping. The first pair of feet are very long, and are folded longitudinally upon the mouth; the succeeding feet are long, slender, and flattened. The abdomen has the same form in both sexes, and is enlarged towards the end. (M. Edwards.)

M. Milne Edwards is of opinion that these singular crustaceans establish, in some respects, the passage between the Ocyopodes, Pinnothereus, and even certain Macrura, such as Callicrana. [Callianassa.]

Description. — Carapace smooth and divided by furrows into three longitudinal portions; a small spine at the spot where the external orbital angle is ordinarily found; anterior border of the carapace very much projecting, and furnished with hairs. Arms curved, and armed below with spiniform teeth; carpus very large; fingers long and curved. Length about one inch.

Locality. — Australasia.

Example, Mysteris longicaudus. (Savigny.)

Description. — Carapace nearly square, and furrowed above; the front orbital border occupying nearly the whole of its width. Pterygostomian regions and external jaw-feet equally furrowed. Feet rather long and slightly compressed. Length about six lines.

Locality. — The Red Sea.

M. Milne Edwards remarks that he here places, not without doubt, a small and very remarkable crustacean which Savigny has figured in the great work on Egypt, and which M. Audouin has referred to the genus Mysteris. It approximates to the Ocyopodes much in the general form of the body, in that of the feet, and in the disposition of the front, the antennae, and the eyes; but it is distinguished from all the preceding Catametopes by the conformation of the external jaw-feet and the form of the buccal frame. This last is very wide behind, and narrow before; the third joint of the external jaw-feet is much larger than the second, and nearly entirely hides the succeeding feet, the first of which is inserted at its anterior and external angle. The palp, placed at the external side of these organs, bears a tolerable resemblance to that of the Ocyopodes, for it does not carry at its extremity a multi-articulate filament, as is the case with the greater part of the Brachyura. M. Milne Edwards is of opinion that this crustacean establishes, by means of the organization of the buccal apparatus, the passage between the Ocyopodes and the Pinnothereus.

Example, Doto sulcatus (Cancer sulcatus, Forsk.; Mysteris sulcatus, Audouin).

Description. — Carapace nearly square, and furrowed above; the front orbital border occupying nearly the whole of its width. Pterygostomian regions and external jaw-feet equally furrowed. Feet rather long and slightly compressed. Length about six lines.

Locality. — The Red Sea.

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Doto sulcatus (enlarged).

a, profile view still more enlarged, without the legs, to show the gnathos;
b, detail of under part of carapace.

PINT, the half of a quart, and the eighth part of a gallon, which is the standard measure connected with the pint.

PINTO, FERNAM MENDEZ, a celebrated Portuguese traveller, was born at Montemor-o-Velho, near Coimbra, of obscure parents, about 1510. He entered the service of a Portuguese gentleman, in which he continued eighteen months. An adventure, by which he adjudged very much of his property, which he does not disclose, obliged him to emigrate to Darien.
cate, and he sailed in a vessel bound for the East Indies. Scarcely however had he lost sight of the coast of Portugal when the vessel was attacked and plundered by pirates, and Pinto was obliged to return to Lisbon, where he entered the service of the Portuguese republic. Many years after, with the expectation of making his fortune, he embarked for India, and arrived at Diu in 1537, where he enlisted among the crew of a vessel designed to cruise against the Turks. He was captured at the mouth of the Ganges, and carried to Mocha, and there sold to a Greek renegado, and afterwards to a Jew, in whose possession he remained till he was redeemed by the Portuguese governor of Ormuz, who procured him the means of going to India. On his return to Europe, Pinto met at Goa, captain-general of Malacca, Pedro de Faria, who took him into his service, and gave him the command of a small vessel employed in the trade with China. Having been attacked at the mouth of the river of Lagos by a Chinese pirate, who boarded and plundered his vessel, Pinto, though wounded, succeeded in making his escape, and arrived at Pattam, on the gulf of Siam.

Antonio de Faria (a brother of Pedro), on hearing the news of the loss of the vessel, swore he would have his revenge, and having enlisted a crew of Portuguese adventurers, and Pinto among them, he sailed from Pattan on the 19th of May, 1546. The Chinese pirate was overtaken, his vessel taken, and Pinto himself captured; but from this time Pinto's life seems to have been one of constant vicissitudes. He was one day the master of countless treasures, on the next going in captivity. In the intervals he was employed in the Japanese, Chinese, and various vessels, by his own devices, which he fully describes in his work. He seems even to have entered at one time the Jesuit convent at Malacca, a circumstance which explains why the earliest account of his travels is found in the first collection of the Jesuit letters, published in Italian, at Venice in 1565, in letters written by him, and dated from the convent. He was present at the death of San Francisco Xavier; and Lucena, in his Life of that saint (Historia de la Vida del Padre Francisco Xavier, Lond., 1608), admits this information from papers procured from Pinto's widow. After twenty-one years' residence in various parts of the East Indies, China, Japan, Siam, &c., Pinto returned to his native country in 1558 (29th of September). He died at Almada, near Lisbon, but the year of his death is not known. The history of his travels and adventures was written for the amusement of his children. It abounds in gross exaggeration, and although there can be no doubt that Pinto visited the countries which he describes, it is also most ascertained fact that most of his descriptions are altogether imaginary, and that whatever curious and important matter is contained in his work is adulterated with idle and extravagant fictions. He died in a small town of Catalonia, where, in the words of his friend, the poet, 'he saw the tombs of the emperors of China,' and by whose route by land through part of the Chinese empire, are of this kind. Pinto's travels were not published until many years after his death. Pedro de Andrade published, in 1614, in Portuguese, under the title of 'Peregrinaçám de Fernan Mendez Pinto,' &c. Six years after they were translated into Spanish by Francisco de Herrera, who added a preface discourse, intended to establish the authenticity of the narrative, Mad., 1620, fol. They were translated into French by Bernard Figuier (Paris, 1628 and 1645, in 4to, and 1830, 3 vola. 8vo.), and into English by H. Cogan (Lond., 1663, and 1692, in fol.). There are also editions of the original Portuguese, 1676, 1711, 1726, 1732, and 1769, with the 'Itinerario de Antonio Tenere.'


PINTURICCHIO, BERNARDINO, born in 1454 at Perugia, was a disciple of Pietro Perugino, under whom he made great progress, and was often employed by his master as his assistant. He painted chiefly history, and also grotesques, and likewise executed his own best portraits, peculiar praise is given to those of popes Pius II. and Innocent VIII., of Giulia Farnese, Cesare Borgia, and Queen Isabella of Spain. He executed numerous works at Rome and other cities of Italy: his manner was singular; he not only finished his paintings very highly, but endeavoured to give them unusual splendour, by introducing rich gilding blended with architectural ornaments, painted so as to resemble high relief, a style wholly incomparable with true taste and the simplicity and dignity of history.

His most celebrated performance is the history of Pius II., painted in ten compartments, in the library of Siena, in which Raphael, then a very young man, and his fellow-student under Pietro Perugino, gave him some assistance.

The last work that he executed was a Nativity for the monastery of St. Francis at Siena, respecting which a story is told by Vasari and De Piles, which seems eminently absurd and improbable. The monks, say, they assigned him a large sum of money, he put on a large painting, at his request, they removed the furniture, except a large old chest quite decayed by time. This too he insisted should be removed, in doing which it fell to pieces, and was found to contain 500 pieces of gold. This was a source of great joy to the monks, but the artist said they must at any rate be grieved that he had lost the treasure by his obstinately insisting on the removal of the chest, that he died of vexation a few months afterwards. How they ascertained that if it had suffered it to remain, he would have examined, and have stolen the treasure, they do not inform us. We suppose the artist himself did not say so. He died in 1413, aged 59. (Vasari; De Piles; Pilkington; Fuseli.)

PINUS, a genus of Gymnosperous Exogens, consisting for the most part of timber trees, inhabiting various temperate countries in the northern hemisphere. They are commonly called pine-trees, and are distinguished from the firs by their leaves, always evergreen, needle-shaped, and growing in threes; also their cone is woody, and is membranous sheath at their base. In reality each parcel of leaves indicates a small branch axillary to a membranous, deciduous, withering leaf. The species are generally large trees, and are of great value, and are used on account of their timber, and are in much request by the planter, on which account we give a very brief enumeration of those species of which anything certain is known, the whole of which are actually in cultivation in Great Britain at this time.

Div. 1. Scales of Cones truncate at apex.

| a. Leaves in pairs |
| * Scales of Cones spinellos at apex |

1. The Scotch Pine (Pinus sylvestris). Trunk erect. Leaves 2, short, glaucous. Cones ovate, stalked, and recurved, with rugged, truncated, depressed scales. This is the most hardy and valuable of all the pines. Its timber furnishes the red deal of the carpenters, and in Scotland, the climate of which country is particularly suited to it, the trees often acquire a great size, and highly picturesque appearance. It is however asserted that the quality of its timber is much deteriorated by being grown in warm districts. In England it is chiefly valued as a nurse to other trees, for which its hardiness and rapid growth render it well adapted. It forms an excellent screen in exposed sandy situations, where no other tree will thrive. Many gardeners consider it the most prolific producer of cones; and Loudon's Arboretum Britannicum; of those of the Pine of Haguenau, a village on the Rhine, is said to be the most important.

2. The Dwarf Pine (Pinus Pumilio). Trunk prostrate, dwarfish. Leaves 2, short, stiff, glaucous. Cones ovate, spreading, sessile, with depressed truncated scales. A small mountain species from the midland parts of Europe. Its timber is of no importance; in fact, from its small size, it can scarcely be said to yield any. It is probably an alpine form of P. sylvestris.

3. The Hooked Pine (P. uncinata). Trunk erect. Leaves 2, short, dark green. Cones oval, recurved, sessile, with pyramidal, ovate, or subulate, acuminate, or acuminated, of small size, an alpine tree, from the Pyrenees, and other European mountains, on the upper zone of vegetation, above P. sylvestris. It is extremely valuable for its hardness and the great durability of its timber. The P. Muglar is apparently the same plant.

4. The Red Pine (Pinus resinosa). Trunk erect, lofty. Leaves 2, long, of a light somewhat glaucous green colour. Cones oval, rounded, sessile, with pyramidal, ovate, acuminate, or acuminated, of small size, a red-leaved alpine tree, from the Pyrenees, and other European mountains, on the upper zone of vegetation, above P. sylvestris. It is extremely valuable for its hardness and the great durability of its timber. The P. Muglar is apparently the same plant.

5. The Alpino Pine (Pinus halepensis). Trunk slender, erect. Leaves 2, long, slender, light green. Cones ovate, stalked, sessile, very regular in form, with depressed
truncated scales. A beautiful species, found wild in the western parts of Europe, from Genoa to Constantinople, and also throughout Syria. It grows fast, and is at once known by its fine light-green foliage; but its wood is not of much value, and it bears the climate of England, with impunity.

6. The Calabrian Pine (Pinus Brutia). Trunk erect. Leaves 2, slender, lax, pale green, very long. Cones sessile, in dense clusters, ovate, acute, very regular and even, with depressed truncate scales, very hard and gnarled, containing a rich resin, and said to yield timber of excellent quality. It is very like the Aleppo Pine, but its cones are sessile and clustered, and it is much more hardy.

7. The Banks Pine (Pinus Banksiana). Trunk low, scoriaceous, generally with lateral branches. Leaves 2, divaricate, oblique. Cones ovate, acuminate, horn-like, curved, erect, in pairs, grey, with rounded depressed truncate scales. An ugly tree, from the most southern parts of North America, where it is called the scrub pine and the grey pine. Its timber seems to be of little value, except for the construction of canoes, for which its lightness and toughness render it well adapted.

8. The Pyrenean Pine (Pinus Pyrenaica). Trunk erect. Leaves 2, long, fine, bright green, clustered at the end of the branches. Cones ovate, drooping, shorter than the leaves, with roundish truncate scales. A Spanish plant, inhabiting the Sierra de Segura, above the limits of the Alpilles, and resembling the P. uncinata. It is said to be of excellent quality and to have been used largely in the Spanish marine. It is reported to be a majestic species, and to be called by the Pyrenean peasantry Pin Naut, from the resemblance it bears to the pine-forests of the Pyrenees.

9. The Poulos Pine (Pinus Pallasiana). Trunk erect, with horizontal branches when old. Leaves 2, dark green, very long, and stiff. Cones curved, horizontal, ovate oblong, as long as, or longer than the leaves, with roundish truncate scales. A fine tree from the central parts of the Crimea, with the habit of the Pinaster. Wood resinous and durable, but difficult to form into good planks on account of being unusually knotty. The resin is stated to be very pleasant to the taste.

10. The Stone Pine (Pinus Pinaea). Trunk erect; when old, flat-headed. Leaves 2, long, stiff, dark-green; when the plant is very young, small and glaucous. Cones roundish, polished, with rounded truncate scales. Seeds large, oblong, with a very short wing. An inhabitant of the southern parts of Europe and the Levant, where the wood is often used in ship-building, and the seeds, which are large and like nuts, are eaten. On the latter account it has accompanied shipping wherever vessels have sailed, and is common in many parts even of the southern hemisphere. The seeds are called pignons by the French. In Naples there is a variety with the shell of the seed thin and tender. The wood is affected as before, but is said to be whiter and rather more durable than that of the Pinaster.

11. The Black Pine (Pinus Austriaca). Trunk erect, with horizontal branches when old. Leaves 2, dark-green, glossy, straight, stiff, from three to five inches long. Cones conical, horizontal, shorter than the leaves, polished, and pale-brown. It is found among the rocks and precipices of southern Germany, and derives its name from the peculiarly dark colour of the foliage. The most sterile soil is said to suit it. The timber is reported to be valuable, but coarse; and to resist alternate dryness and moisture better than the larch.

12. The Corsican Pine (Pinus Lariaca). Trunk very erect and tall. Leaves in pairs, long, deep green, distant, rustling in the wind. Branches serrated, and covered with leaves, with roundish rugose truncate scales. A noble tree from the mountains of Corsica, Greece, Turkey, and Spain. It grows faster than any other known species, and produces excellent timber, similar in quality to red deal, but more brittle and less elastic. The French use it extensively in ship-building. The tree is now becoming common in this country.

** Scallops of Cones spiny at apex.

13. The Cluster Pine (Pinus Pinaster). Trunk lofty, erect. Leaves 2, long, stiff, dark green. Cones clustered, recurved, conical, shorter than the leaves, with pyramidal scales terminated by a small rigid spine. A noble species, inhabiting the mountains of mainland France and Southern Europe, especially along the coast. Its timber is soft, light, coarse, and only fit for very common purposes; but it affords a large quantity of resin and tar, and is much consumed in the manufacture of lampblack. It is this species that has been so successfully employed in fixing the loose drifting sand of the barren plains of some parts of France. An excellent account of it is given by Mr. Loudon, in his ' Arboriculture Britannicum,' p. 2219. Many varieties are known, but the best Obtusifolium, a pyramidal variety, from which the best obtained of the species is called P. Lemoniapai, with an irregular stunted zigzag habit, first observed upon the property of Sir Charles Lemon in Cornwall, and the P. excarnata, a very vigorous variety introduced from Tenerife by the present Earl of Aberdeen. Pinus Masoniana, a Chinese plant, is said to be the same as this.

14. The Prickly Pine (Pinus pungens). A large tree. Leaves 2, short, compact, pale green. Cones ovate, clustered, drooping, leaves with the branches, covered with large, coarse, spine. The pine-forests of the southern states of America are said to be composed of this species, in great proportion. The small pyramidal scales terminated by a stiff strong spine. A native of Virginia and North Carolina. The timber seems of no value.

15. The Yellow Pine (Pinus mitis). A fine tree. Leaves 2, long, slender, dark green. Cones ovate, pendulous, shorter than the leaves, with depressed roundish scales, armed with a small spine. Young shoots violet. A common inhabitant of the pine-forests of North America, as far north as Connecticut, and as far south as Georgia and Florida, where it is much esteemed for its timber and resin.

16. The Jersey Pine (Pinus inopis). A low gnarled tree. Leaves 2, dark green, from two to three inches long. Cones recurved, ovate-oblong, much longer than the leaves, with spiny spreading scales. Young shoots violet. A native of the more southern states of the American Union. Its timber is of little use except for fuel. In this country it is usually a miserable-looking species, evidently unadapted to our climate.

17. The Black Pine (Pinus Banksiana). Trunk erect, with horizontal branches when old. Leaves 2, dark-green, glossy, straight, stiff, from three to five inches long. Cones conical, horizontal, shorter than the leaves, polished, and pale-brown. It is found among the rocks and precipices of southern Germany, and derives its name from the peculiarly dark colour of the foliage. The most sterile soil is said to suit it. The timber is reported to be valuable, but coarse; and to resist alternate dryness and moisture better than the larch.
grass-green, clustered at the ends of the branches. Cones ovate-oblong, seven or eight inches long, with depressed scales, and in the middle with a small prick. A native of Virginia and the neighboring states of America to the south, where it acquires the height of from 60 to 70 feet, with a trunk from 15 to 18 inches in diameter for two-thirds of its length. Its timber is of excellent quality, light, clean, and heavy. It is frequently grown for the ship-building, particularly for masts. It also yields abundance of tar. It is unfortunate that this, the handsomest and the best of the North American pines, should be too tender for the climate of England.

23. The Frankincense Pine (Pinus Teda). Trunk lofty, straight. Leaves 3, pale green, stout, straight. Curved, oblong, the length of the leaves, with compressed wood, armed with a sharp point. A tree said to acquire the height of 80 feet, in the barrens of Florida and Virginia, but not much known in England, where it seldom thrives. There are however some fine specimens at Pain's Hill, and at other places near London. The timber is soft and perishable, but it yields a fragrant turpentine plentifully.

24. The Pitch Pine (Pinus rigida). Trunk lofty, straight, much branched. Leaves 3, of variable lengths. Cones clumped, arising from round compressed pyramidal scales, terminated by a small hooked spine. Found in poor soil in most parts of the United States, and even inhabiting salt-marshes overflowed by the sea. It has a thickish dark-coloured bark, and, in consequence of the number of its branches, is not highly esteemed for ship building. The wood yields tar in abundance, but is coarse-grained and of inferior quality. When growing in swamps, it has little or no heart-wood.

25. The Pond Pine (Pinus serotina). Trunk much branched. Leaves 3, very long (five or six inches). Cones roundish-obate, in pairs, with prominent rounded scales, armed with a short brittle prick. An obscure species, probably not distinct from the Pitch Pine. It forms a small tree, whose wood is of bad quality, and is found from New Jersey to Carolina in wet places, by the side of ponds, &c.

26. The heavy-wooded Pine (Pinus ponderosa). Trunk very rugged, and irregularly branched. Leaves 3, very long and strong. Cones small, oblong, with strong pyramidal scales, terminated by a small recurved prick. A large tree, with the habit of the Corsican pine. It was found in North-West America, by Douglas, and is a very rapid grower. The growth of the tree is however inelegant, and its timber, though heavy and durable, very coarse. In its native country it is infested with the Viscom Oxycedri, a parasitical plant.

27. The Sabine Pine (Pinus Sabuliana). Trunk straight, erect; the young shoots covered by a glaucous bloom. Leaves 3, very long and lax, glaucous, and serrated. Cones very large, roundish ovate, with large pyramidal hooked scales. A noble Californian tree, with a trunk from 110 to 140 feet high, and 3 to 12 feet in diameter, the branches with the ground, when standing far apart or solitary. The wood is white, soft, and not durable. The cones are often six inches in diameter, and are very hard, heavy, and woody.

28. The Coulter Pine (Pinus Coulteri). Trunk straight, erect; the young shoots covered with a glaucous bloom. Leaves 3, very long and stiff, glaucous, and serrated. Cones very large, oblong, with long wedge-shaped, rigid, woody, horned scales. A fine tree, from California, very like the Sabine Pine, and the two are perhaps too nearly related. The cones are however still larger and heavier than in that species, and more oblong, and the seeds are smaller. It is called P. macrocarpa in gardens.

29. The long-leaved Pine (Pinus longifolia). Trunk erect, with a coarse rugged bark, and whorled branches. Leaves very long, drooping, slender, bright green, channelled, and serrated. Cones shorter than the leaves, oblong-ovate, spreading, armed with prickly, obtuse, mucronate, corky, recurved scales. Seed large, eatable. An Indian species, inhabiting the valley and lower hills of Nepal. It is extremely beautiful, but too tender for the climate of England.

30. The Neusa Pine (Pinus Gerardiana). Trunk lofty, with a conical head. Leaves 3, short, stiff, glaucous, absolutely serrated, with deciduous sheaths. Cones very like those of P. longifolia. Seeds large, eatable. A native of the richest forests of the Himalayas, and chiefly occupying the dry bleak face of the Tartarian side of those mountains. It is represented to be a large tree, conical in form and compact habit. The cones from 2 to 10 inches long. The Chilghora Pine is thought to be the same thing.

c. Leaves in fives.

* Scales of Cones spineless at apex.

31. The Egg- or rounded Pine (Pinus thunbergi). Leaves 5, slender, from 3 to 11 inches long. Cones roundish, ovate, polished, hard, with truncated scales. From the pine-region of Mexico, and also from the warmer valleys, forming a tree from 30 to 40 feet high.

32. The Thread-leaved Pine (Pinus flexilis). Leaves 3, very slender, 3 or 4 inches long, rough-edged, light green. Cones ovate, 2 inches long, on a short stalk, with truncate depressed scales, a little hollowed. An inhabitant of the cold regions of Mexico. Nothing is on record of its habit.

33. The Montezuma Pine (Pinus Montezumae). Leaves 5, rather rigid, rough-edged, about 6 inches long. Cones ovate, oblong, bright brown, about as long as the leaves, with elevated, rugged, truncated scales. A native of the mountains of Mexico to the height of 11,000 feet above the sea.

34. The Thread-leaved Pinus (Pinus filfolia). Leaves 5, from a clear green, long, acutely triangular. Cones sessile, ovate-acuminate, woolly, hard, curved, 9 inches long, 3 inches in diameter at the base, with lozenge-shaped pyramidal, depressed scales, and a hard woody compressed mass much in the middle. A noble pine, found in Guatemala by Mr. Hartweg. Nothing is yet known of its habits or timber.

35. The Acapulco Pine (Pinus Acapulqueens). Leaves 5, thin, short, very glaucous, as well as the shoots. Cones pendulous, ovate-oblong, acute, when ripe, with tapering scales, often contracted in the middle. Leaves about 6 inches long. Cones closely covered with pyramidal elevations, about 4 inches long. Found in Mexico, in ravines between the mountains of Acapulco, growing at 8,000 feet.

36. The Pala Weymouth Pine (Pinus Pseudostrobus) Leaves 5, very fine, and glaucous. Cones ovate, whorled, horizontal, about 4 inches long, by an inch and a half in breadth over the middle, with pyramidal erect scales. A Mexican pine, with the habit but not the cones of a Weymouth pine, found very commonly at Anganguco, about 8,000 feet above the sea.

37. The Bedford Pine (Pinus Russelianna). Leaves 5, very long. Cones tapering, horizontal, a little drooping, nearly straight, from 7 to 8 inches long, about 2 inches wide near the base, and almost acute at the upper end, with pyramidal straight obuse scales. Native of Mexico near Real del Monte.

38. The Arizona Pine (Pinus Devilamina). Leaves 5, very long. Cones pendulous, solitary, horn-shaped, from 9 to 10 inches long, about 3 inches in diameter near the base, and tapering to 1½ inches, with rounded, obtuse, polished scales, about 3 inches long. Cones 5 to 6 feet in diameter, forming a large tree 60 or 80 feet high, between Real del Monte and Regla. The young branches are nearly an inch in diameter.

39. The Hartweg Pine (Pinus Hartwegii). Leaves 4, very slender, about 6 inches long. Cones pendulous, oblong, obtuse, clustered, about 4 inches long, with depressed truncated scales, having a projecting callosity in the middle. A Mexican tree 40 or 50 feet high. The cones consist of a clear grayish-brown, and of nearly the same diameter throughout.

** Scales of Cones spiny at apex.

40. The West Indian Pine (Pinus occidentalis). Leaves 5, pale green, slender, much longer than the cones. Cones ovate-oblong, about 6 inches long, usually knotted structure. The two prominent scales, tipped by a sharp prick. A native of St. Domingo, on the mountains where snow occasionally falls.

41. The long-leaved Pine (Pinus macrophyllea). Leaves 5, from 14 to 15 inches long. Cones straight, horizontal, ovate, tapering, solitary; 6 or 7 inches long, and about 3 inches broad at the base, with the ends of the scales strongly hooked backwards. A small tree from the North of Mexico.

Div. 2. Scales of Cones flat, and compressed at the apex.

42. The Mexican Cedra (Pinus Cembroides or Llavea). Leaves 5, short, tufted, glaucous, and twisted.
Cones small, roundish-ovate, hard, with elevated roundish obtuse scales. Seeds large, easterly. A small Mexican tree, occurring in large forests, and producing seeds similar to those of the Stone and Neoza pines.

44. The Weymouth Pine (Pinus Strobus). Trunk erect, very lofty. Leaves 5, with no sheath, short, stiff, glaucous green. Cones ascending, oblong, about the length of the leaves, with thin callous-pointed scales. Seeds large, without wings. A tree of considerable size, inhabiting the sides of mountains in Siberia, Tartary, Switzerland, and Italy. It is very ornamental and hardy, grows tolerably fast, and produces a fragrant, fine-grained, soft wood, well suited for carvers and turners. The seeds yield a large quantity of oil.

45. The Lofty Pine (Pinus excelsa). Trunk erect, very lofty. Leaves 5, bright green, distinctly glaucous on one side, with no sheath, leaves narrow long, pendulous, stalked, from 12 to 15 inches long, with broad rounded scales. A fine Himalayan tree, bearing the climate of England without protection. It has very much the habit of the Weymouth pine, but its leaves are more glaucous and the cones smaller.

46. The Lambert Pine (Pinus Lambertiana). Trunk erect, very lofty. Leaves 5, rather stiff, bright green, roughish, with no sheaths. Cones very large, pendulous, from 14 to 18 inches long, with broad rounded scales. Seeds large, easterly. An enormous tree found by Douglas in New Alaska, on sandy plains where no other vegetation exists. Specimens were found 200 feet high and more. The wood is spongy, and of no value except for fire-wood. The seeds are contained by the moulded resin.

47. The Ayacahuite Pine (Pinus Ayacahuite). Leaves 5, with deciduous sheaths, slender, very glaucous on one side, sharp-pointed, from 2 to 4 inches long. Cones drooping, a foot or more long, very slender, with distant, oblong-lanceolate, obtuse, spreading scales. A gigantic tree resembling the Weymouth pine in habit: found by Elenberg near Astorian in Mexico, and by Hartweg in Guatemala. It produces an unusually large quantity of a clean and hard, but moulded, resin.

Besides the foregoing, the following species of Pines are mentioned in books, but they are imperfectly known to be worth further notice in this place: viz. P. californica, P. lasiocarpa, P. pungens, P. monticola, P. torulosa, P. radiata, P. contorta, P. squamosa, P. turbinata.

The first historical picture which established its reputation was the altar-piece in the church of S. Gio. Crisostomo, at Venice, which from its richness and harmony of colouring has frequently been mistaken for a work by Gior- dia. It is by Agostino Chigi, a rich merchant, who traded at Venice, and whom Michelangelo employed in ornamenting his palace of the Farnesina, in conjunction with Baldassarre Peruzzi, where Raffaello had painted his celebrated Galatea. Thus painting in competition with the master and in imitation of the examples which he studied the antique, and obtained the instruction and assistance of Michael Angelo. Indeed it is said that that illustrious painter, growing jealous of the fame of his pupil, and allowing that care was taken of the correct and proper colourist, in the hope that, assisted by his composition, Piombo might successfully rival the efforts of Urbino. Michael Angelo accordingly furnished the designs for the Pietà, in the church of the Convention at Viterbo, and the Transfiguration and the Flagellation in S. Pietro in Montorio, at Rome, the execution of which however, in consequence of Piombo’s tedious mode of proceeding, occupied six years. The extraordinary beauty of the colouring and the grandeur of Michael Angelo’s composition and design, in these celebrated productions, were the objects of universal surprise and applause.

At this time cardinal Giulio de’ Medici commissioned Raffaello to paint his picture, of the Transfiguration, being desirous of presenting an altar-piece to the cathedral of Narbonne, of which he was archbishop, he engaged Sebastiani to paint a picture of the Raising of Lazarus, of the same dimensions, which in consequence of the immense cost was again assisted by the powers of Buonarotti, by whom it was composed and designed. The picture was publicly exhibited at Rome, in competition with the Transfiguration; and it is no mean proof of its extraordinary merit, that, notwithstanding the transcendental beauty of Raffaello’s chief merits, Sebastiano’s performance excelled universal admiration.

This picture was removed, by the regent of France, from the cathedral of Narbonne into the Orleans collection, where it was placed, by the late Prince de Joinville, for two thousand guineas, and is now deposited in the National Gallery. It is painted on canvas, and its size is thirteen feet six inches high, by nine feet five inches wide.

Sebastiano was greatly patronised by Pope Clement VIII, who conferred upon him the office of keeper of the papal signet, which was the cause of his name, Del Piombo, in allusion to the lead of the seal. This post rendering it necessary that he should assume a religious habit, he left the painting of pictures, and was thenceforth called Frate Bastiano del Piombo. His last work was the chapel of the Chigi family, in Santa Maria del Popolo, which he left imperfect, and it was afterwards finished by Francesco Salviati. The life of the painter was of a feverish and consumptive nature; he died at the age of sixty-two years. He is said to have been the inventor of painting upon walls with oil-colour, and of preventing the colours from becoming dark by applying, in the first instance, a layer of gesso and Grecian pitch or, according to some authorities, a plaster composed of quick-lime, pitch, and mastic.

‘Portrait, in its most genuine sense,’ observes Fuseli, ‘was the province of Sebastiano. Nature had given him an eye to penetrate and, with practice, to transcribe the character and beauties of single objects, but had refused him all ideal power—that energy of mind which commands and unites a numerous whole. As slow and irresolute in conceiving, as the pupil of the subject, he began what he did with reluctance and finished with fatigue.’

(Lanzi, Storia Pitiottica, iii. 66; Pilkington’s Dict., by Fuseli; Bryan’s Dict.)

PIOZZI, MRS., was originally Miss Esther Lynch Salusbury, being the daughter of John Salusbury, Esq., of Bod_vel in Carnarvonshire, where she was born in 1739. Her good looks and vivacity early acquired her some distinction in the London world of fashion, ended in her marriage, in 1773, to Mr. Henry Piozzi, a brewer in Southwark, and then one of the members for that borough. It was soon after she became Mrs. Thrale that her acquaintance with Dr. Johnson commenced, which the circumstance of her living with him in any place it may hold in the annals of our literature. But Thrale having died in 1781, his widow retired, with her four daughters, to Bath, and there, having met with an Italian music-master, of the name of Gabriel Piazza,
fall in love with and married him in 1784; and that proceeding, from which her old friend earnestly endeavoured to dissuade her, produced a complete rupture between them a short time before Johnson's death. This nevertheless did not prevent Mrs. Piozzi from publishing, in 1786, an octavo volume of the numbers of the *Review of Samuel Johnson*, during the last Twenty Years of his Life. Many things in this publication gave great offence to Boswell and Johnson's other friends, who professed to regard it as having been prompted mainly by feminine spite, and regretted that another conclusion was not far wrong. In this conclusion, there was also ground for some retaliation from the other side; and the view which a large portion of the public took of the feud between the parties may be seen in Dr. Warton's 'Pindar: 4, and in the anonymous poem entitled 'Bozzy and Piozzi.' Meanwhile Mrs. Piozzi followed up her first book by another, in 1788, entitled Letters to and from Dr. Samuel Johnson, in two vols. 8vo. But before this she had gone with her husband to Florence, and there, in conjunction with three gentlemen, named Merry, Greathead, and Parsons (the once famous but now almost forgotten founders of the Della Crusca school of poetry), she printed but did not publish, in 1786, a collection of pieces in prose and verse under the title of The Florentine Miscellany. Mrs. Piozzi's other works are: Observations and Reflections made in the course of a journey through France, Italy, and Germany, two vols. 8vo., 1783; British Synonymy, or an Attempt at distinguishing the Chief Words in English Conversation, 2 vols. 8vo., 1794; and a Review of the most striking and important Events, Characters, Situations, and their Consequences, which the last thirty Years have been the subject to the World of Mankind, 2 vols. 4to, 1801. She is said to have also contributed many anonymous pieces, both in prose and verse, to the periodical publications of her day; but it has generally been assumed that nothing she wrote at a later date is so good as some poems she contributed so early as in 1765 to the volume of Miscellanies published by Anna Maria Williams, particularly one called The Three Warnings, the superior merit of which, rather than any proper authority, has led to the supposition that she was materially assisted in its composition by her friend Johnson. It certainly however is not much in Johnson's style. Mrs. Piozzi survived her second husband, and died at Clifton near Bristol, on the 2nd of May, 1821.

**PIPA.** [Frogs, vol. x., p. 493, 496.]

**PIPE.** A column of air contained in a tube and maintained in a state of vibration yields a musical sound, depending upon the length and altitude upon the state of the atmosphere. Our object in the present article is to give such an account of the theory of a musical pipe as may, with the articles Acoustics, Cord, Harmonics, Scale, Temperament, &c, complete the statement of the leading principles and doctrines of the subject. We shall begin by correcting one mistake in each of the articles Acoustics and Cord. In the former (p. 97) the number of vibrations of the middle A of the treble oboe is given; those, with the other five terms of the scale, as used in that article, should all be doubled, since the numbers there given (from the Berlin Transactions) mean complete or double vibrations, answering to double waves of sound (or a condensation and rarefaction in each). The mean value in that page gives 430 double vibrations for the note A, a result we shall presently use. Dr. Smith, in his Harmonies (1749), found, by comparison of an organ-pipe with a wire, that the next below the A just mentioned gave the same number of vibrations as the cold day of November, a temperate day of September, and a warm day of August: taking 262 as the mean, this would give only 393 double vibrations for A instead of 430. If then all the experiments are trustworthy, the A of Dr. Smith's organ (at Trinity College, Cambridge) must have been nearly a tone below that of the orchestrists of our day. We have often heard it said that what is called concert-pitch, and perfectly in accord, is not, in general, in accord in the last century, but we had no idea, till we met with Dr. Smith's experiments, that there was any positive foundation for the assertion.

Throughout the formula in the article Cord p must be read instead of 2g. The result of the example [page 6. Committee 1856] is probably 148.

In this subject a distinct line should be drawn between those circumstances which are of easy and difficult explanation: for example, to a person who thoroughly understands the composition of waves moving in opposite directions [Acoustics, pages 93, 94] it is not difficult to point out that the middle A is struck in a musical instrument; but to explain how the action of a current of air, as in the common flute, or the joint action of the air and a reed, as in the clarinet or reed-stops of an organ, produces and maintains the equivalent of the vibrations, is that to take place at those extremes, or only very small ones compared with those which take place in the interior of the tube. To get approximately at the conditions of vibration, let us suppose that no condensation or rarefaction takes place at those extremes. We then see [Acoustics, pp. 93, 94] that the state of the pipe, its two extremes never being condensed or rarefied, is as it would be if two waves of sound were travelling in opposite directions, every particle in the air having the same oscillations as the average or the sum of the oscillations and velocities of both. Moreover, the distance between two uncondensed particles is always the whole length of the wave of condensation or that of rarefaction, or a multiple of half the whole wave. In a pipe of the half-length of a double wave or a multiple of this half-length. When the pipe sounds the lowest note, it must give the longest wave; that is, the length of the pipe must be that of the simple harmonic vibration of rarefaction. Hence the lowest note which a pipe will yield, which is called its fundamental note, is that belonging to a double wave of sound which is double of its length. Each double wave answers to a complete or double vibration of a pipe.

To compare this result with practice, let us suppose sound to travel at the rate of 1125 feet per second (temperature 62° Fahr.). The note e having 258 double vibrations per second, this 1125 feet must contain 258 double waves, or each double wave must be 436 feet. The single wave then is 218, or 2 feet 2 inches and 36 of an inch, which is the theoretical length of the pipe. Now the organ-pipes (about 34 feet) [See, Construction or, vol. x., p. 493], but this of course is too large a pipe for a French organ-builder also say 2 feet (according to Biot), and the French foot is longer than the English. Further on in the article referred to we see 2 feet 2 inches given as the length of the e in an open pipe. The foot 1 inch in a stopped pipe (the stopped diapason), which, as we shall presently see, ought to be half as long as an open pipe. The common flute, when everything is stopped, gives the same sound, and by the embouchure (or mouth-hole) to the end of the instrument is a little more than 2 feet, but certainly never 2 feet 2 inches. It must be remembered however that this instrument is made up of the flute (so called) and the player, whose lips, when they come to the embouchure, confine the air, and are equivalent to a slight lengthening of the pipe. It is not the manner of blowing which does this, but the approach of the lips, as may be thus shown. Take a common flute, and, without holding it, blow the note A, and secondly, strike the same hole with the finger; a faint sound will be heard. Now approach the lips to the embouchure, but without blowing, and then strike the same hole with the finger; another faint sound will be heard, decidedly flattened. It is known to those who play on this instrument (to those who play in tune at least) that drawing the lips back, so as not so much to confine the air contiguous to the embouchure, sharpens the tone, and what some persons call hummuring the instrument. It is then the embouchure, and the pressure of the lips, so as to shorten or lengthen the pipe by turns, according to the note to be sounded. It is also well known to players that this hummuring can be carried to a much greater extent with the high notes than with the low notes; but so little

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* The cause of this error is an inadvertency in the article Sound in the *Review of Metrop.,* the distinguished author of which, having written *y* as he was using *y* in a different sense from the usual one, and (p. 370) makes the velocity of a pulse along a stretched cord to be that acquired in falling down the slope of the cord, and the slope of the object weight is equal to the tension, whereas it should have been half that length,
were the practical musicians in connection with the theoretical in the time of Daniel Bernoulli (who first gave the mathematical treatment of this subject), that this simple fact was only discovered by him from a new and somewhat complicated experiment.

In the preceding theory all the parts of any section of the pipe perpendicular to its axis are supposed to vibrate in the same way as a free flute or in the organ-pipe, in which the cause of condensation is supplied at the side; and in fact all experiments in which the cause of condensation has been equally applied over the whole of the pipe parallel to the axis have agreed in the result that the time of vibration is wholly independent of the diameter of the tube: while those in which the same was not equally applied give the result that the greater the diameter the lower is the tone. Moreover, the same agreement holds in the case of a flute, though it is not equivalent to the formation of a new pipe terminating at that orifice, though the results are somewhat resembling. Any note between the fundamental note and its octave may be obtained by an office of one size or another made at or near the middle of the pipe.

We have seen that we may suppose the extremities of the open pipe to contain between them 2, 3, &c. half-waves, whereas if we suppose the open half-length of the tube will give the Harmonics of the fundamental note. This subject is sufficiently treated in the article cited.

Various instruments yield different harmonics more or less readily; the general rule being that the more violent the sound which is produced the larger will be the number of half-waves formed in the tube, and the higher the Harmonics: also that a certain diameter, the larger the greater the length of the tube, is necessary to the production of the fundamental. If, on the contrary, we imagine the tube to be very small, in the bore, it will yield the octave of the fundamental note; or if the latter, only with great attention to the voicing, or adjustment of the orifice through which the wind enters, if the bore of a flute be too narrow (which we imagine to be the case in modern instruments), the lower notes will be difficult to obtain. And the various harmonics are produced with very different degrees of facility; a circumstance of which the theory can give no account. Thus, players on the trumpet find it exceedingly difficult to produce that tone which divides the instrument into seven parts, or the flat seventh in the third octave above the fundamental note; while in the flute there is no moderately skilful player who cannot produce it. It is to be observed however that all pipes of the trumpet class are of tapering diameter; and though they agree in all material points with the theory of cylindrical and prismatic pipes, it is not remarkable, in the present state of the mathematical analysis of the subject, that they should present circumstances difficult of explanation.

It will be obvious, from the considerations in Acoustics, that the boundaries of the pipe contain between them n sections, the length of the pipe is four times the length of the section (included) at which the velocities are always greater than elsewhere, and no condensations or rarefactions are always greater than elsewhere, and which are always at rest or nearly so. These immovable points are called nodes of vibration; and there is one of them in the middle of the tube only when the number of half waves in the pipe is odd.

Let us consider the case of a pipe with one end closed. It is obvious now that the open extremity is a point of no condensation, while the closed extremity must be a node, or point of no velocity. Hence the tube must be the half of an odd number of simple waves in length, twice the tube must be an odd number of simple waves, and four times the tube an odd number of double waves in length. Hence the fundamental note belongs to a double wave of four times the length of the tube; so that the fundamental note of a pipe closed at one end is an octave lower than that of the same pipe open at both ends. It is the same thing to say that a pipe of half the length of an open pipe, closed at one end, gives the same note as the open pipe. This is the reasoning which led to the supposition of the note of the organ pipe being higher than the pipe of double the length, but every other one, beginning from the fundamental note. The number of vibrations per second being 1, those of the harmonics producible by the pipe closed at one end, are 3, 5, 7, &c. We shall leave the pipe closed at both ends, but must not infer that the vibrations of an elastic body fixed at one end (as the spring of a tuning-fork) answer to those of a pipe closed at one end, since their law is very different.

The theory is for a closed pipe, and then to suppose the open pipe made of two closed pipes, with their closed ends together, and their closing diaphragms removed. The opposition of the vibrating movements will then keep the particles in the middle at rest. This is a sufficient explanation of the vibrations of the open pipe in which there is a node in the middle.

We now come to the explanation of the manner in which the sonorous vibration of a pipe is maintained. If we suppose a vibrating body placed at the orifice, it is found that if the vibrations of the body be equal or nearly equal to those of the fundamental note of the tube in the preceding theory, or one of its harmonics, the sound of the vibrating body is greater than that of the tube; but if it be not in phase, as a resonator of this tube, though it may sharpen or flatten the note, does not by any means produce such a difference as would be caused by the same alteration, if the sound were caused by the tube alone. We do not intend to go into this subject; the reader may distinguish between the two resonators, mentally, in a paper by Mr. Hopkins, published in the fifth volume of the Transactions of the Cambridge Philosophical Society.

When the sound is caused by a current of air, as in the common flute, or simple organ pipe, a tolerably satisfactory explanation of the phenomena has been given in the case of the pipe closed at one end (to which writers have confined themselves); but no explanation in the other case. In the former case, as in the case of the Pan's pipe, a current of air is directed laterally over the mouth of the pipe, with a slight obliquity of direction. A condensation is therefore produced in the tube, which travels to the closed end, and is there reflected; so that by the time the condensation has travelled over twice the length of the tube (down and back again), the whole condensation, such as it was when it began, is doubled. Hence the air in the tube has now become more powerful than the external stream, and the condensed portion begins to be discharged. This continues until not only the whole of the condensation is discharged, but also until all the velocity of the issuing particles has been destroyed; and then the whole of the radical condensation, or rarefaction in the tube. The effect of the condensation is destroyed in the same time as that in which it was produced; and hence the complete condensation belongs to the whole length of the closed end of the pipe. The preceding explanation is, we know of no way of applying even so much to the open tube.

It is also to be noted that the whole of the preceding theory is but an approximation. The extremities of the open tube are not points of absolute non-condensation and non-rarefaction, but points at which the condensations and rarefactions are least and small. Similarly the nodes are not points in which the air is absolutely at rest, but points at which the motion is least. The extensions of this theory, however, important as they are in a physical point of view, are not essential to that fundamental explanation of the musical phenomena of a pipe, to which we are expressing ourselves in the present article.

PIPE (measure), a name given to two Hogsheads of the old wine measure; two hogsheads of ale or beer were called a butt.

PIPE-OFFICE, or more properly the Office of the Clerk of the Pipe, a very antient office in the court of Exchequer. This was formerly at Westminster, but removed to Somerset-house towards the close of the last century, where the duties of the office were performed and where that court belonging to the custody of the king's remembrancer of the exchequer.
The business of the office had been much reduced by former acts of parliament, viz. by an act of 52 George III., which transferred the management of portions of the land revenue of the office of the treasurers of the king's woods, and by acts of 1 and 2 George IV., c. 121, and 3 Geo. IV., c. 88, which transferred the duty of recording what were called the foreign accounts, or those of supplies granted by parliament, to the audit and tax office.

Since this office was made up year by year the record called the great roll of the pipe, or more correctly the great roll of the exchequer, in which was entered the revenue accruing to the crown in the different counties of the realm, for the charging and discharging the sheriffs and other accountants. Of this roll the deputy clerk of the pipe gives the following account in reply to the circular questions of the commissioners on the public records in 1832:—

The antiquity of this roll is, however, very doubtful. The earliest account extant is that of 1833, and it is justly spoken of by Madox, the author of 'The History of the Exchequer,' as 'a most stately record,' and it is said that no country in Europe possesses any record that can be compared with it. Two only of these rolls have been lost. The other is the only one we have in antiquity to about seventy years from the date of the preparation of the great survey of England by the Conqueror, known by the name of 'Domesday Book.' It abounds, it may be added, with valuable notices of the men who are thereby distinguished in English history through the whole of this period, and of the transactions of the time, recorded in every instance by a contemporaneous hand.

There is one roll of a still earlier date, which has evidently been carried by some fortunate chance when the other rolls of the same reign perished. It was formerly thought to be the roll of the 1st of Henry II.; but the antiquaries of the seventeenth century, on an imperfect survey of its contents, determined that it belonged to the 5th year of King Stephen. Accordingly it has been regarded in the office as the roll of that reign, and as the roll of the 5th of Stephen it has been repeatedly quoted by historical writers, and especially by Dugdale, in his 'History of the Baronage of England,' and his 'Ipswich Antiquities.' It has been mentioned in it to the fifth year in the reign of Stephen. Madox also often quotes it as the roll of the 5th of Stephen, though he saw enough in it to lead him to refer it to the reign of Henry II. The roll has been published by the late commissioners on the public records, and Mr. Hunter, one of the sub-commissioners, prefixed to it a disquisition on the year to which it belongs, in which he has shown that it is the roll of the thirty-first year of the reign of King Henry I.: thus carrying it back into the reign of one of the sons of the Conqueror, from which scarcely any national record except this has descended, and removing at once all the great historical difficulties which have arisen out of the unfortunate reference of it to the reign of his successor Stephen.

The commissioners on the public records have printed other portions of the early pipe rolls, but the volumes have not been completed.

Beside the great roll, there was a similar roll prepared by the comptroller of the pipe, which has been called the chancellor's roll. This series is far less complete than the other; and it is thought not to be from the great roll and that it was never consulted, and as it appeared desirable that access should be made easier to it than could be the case while it remained in the custody of the officers of the exchequer, the late commissioners on the public records directed the removal of it to the British Museum, where it may now be consulted under the same regulations to which the other manuscripts in that depository are subjected.

The conjectures respecting the origin of the name of pipe as applied to the rolls and to the exchequer are scarcely deserving notice. One conjecture is that the rolls are so called because in form they resemble pipes another that they were transmitted through a certain pipe from one room of the exchequer to another. It may be conceived that a pipe was first made up for the account of the office, and that the name of the exchequer came from this pipe.

Piper, Piper Belle, Linn., and Piper Strioba, Linn. The leaves of these two species are extensively used by the natives of the East Indies, and lately of the West, to chew with the Areca Cubba, which is a restorative of the powers of the stomach and promoter of digestion. It is capable however of producing, like some other species of piper, intoxicating effects, and should be used in moderation. (Curtis, Bot. Mag., t. 3192.)

It is also employed, in a mixture of the freshly expressed juice, as a febrifuge medicine, and as an antispasmodic, especially against obstinate dry coughs.

Piper CUBEBA, Linn., is generally regarded as the source of the official cubeb; but, according to Blumen- canicum, Rumph., which is the P. cubeba of Roxburgh, yields the greater portion of the cubeb of commerce. The fruits of both are stalked, but that of the former is larger and has its rind against the latter. Both are common in Java, where, as in other parts of India, they are used as a grateful condiment, as common pepper is in Europe. They are also employed medicinally in the same complaints as give them repute in Europe.

The black pepper-corns (but with a little foot-stalk, from one third to half an inch long, hence called sometimes P. caudatum or P. pedicellosum), more or less round, of a blackish-grey or greyishbrown color, are known commonly as cubebs. A leaf, which encloses a hard round oiled seed. The husk has a pleasant taste; the seed a bitterish, acid, peppery, aromatic, and camphor-like flavour.

Those which come from the islands of the Indian archipelago are the best. A sort from the Mauritius, small, or about the size of a millet-seed, are from some unknown species. The Guinea or African cubeb is the produce of Piper Afzeii.

Indian cubeb is frequently adulterated with black pepper, pimento berries, or the fruits of the Rhamnus catharticus. Genuine cubeb consists of waxy matter, two kinds of volatile oil, a peculiar resin (cubebin), balsamic resin, &c.

The volatile oil by rest deposits a camphor, which crystallizes in four-sided plates. The resin is analogous to that of copaiba, and has, like it, a peculiar influence over mucous membranes, especially those of the urino-genital organs. Piper LONGUM, a native of the East Indies, the female spike of which, having attached to it the dried half-ripe berries (resembling the catkin of the birch), is used in medicine. It has nearly the same chemical composition with piper cubeba, and produces the same effects, but is not considered to contain piperin. The root is employed by the Hindoos, but it is still weaker than the fruit.

Piper NIGRUM, Linn., a climbing plant of the East Indies, sacred to the Hindus, is also frequently used in plantations stretching from the 90th to the 110th degree of E. Lat. and from the 5th degree of S. Lat. to the 12th of N. Lat., which limits comprise Sumatra, Borneo, the Malay Peninsula, and all countries to the east of the Gulf of Siam. The best pepper comes from Malabar, the least esteemed from Java and Sumatra. The plant is allowed to grow, trained to the stem of the Areca catechu, and other trees, especially the Jack (Artocarpus) and Hyperanthera Morinda (or horse-radish-trees), four years before the fruit can be collected. The berries are gathered when yet green, before they are perfectly ripe, and quickly dried on mats, by which they turn black. When plucked too young, they speedily fall into a state of powder. Those are separated from the others by sieves and winnowing. In this condition it is termed black pepper. White pepper is the same fruit freed from the outer rind: for this purpose, the ripe berries are allowed to macerate in water and the husk is removed. These are again thoroughly ground, and formed into a smooth, of a greyish white colour, varying to yellow, with a less powerful odour and taste than the black.

According to the analysis of Pelletier, black pepper contains an oil and OJ. is extracted from it, the gums, extractive, gum, bassorine, mace, and tartaric acids, salts, &c.

The odour of pepper is probably due to the volatile oil, which is not acid; the pungent taste is most likely owing to the resin. Piperin, the exact nature of which is not ascertained, but when perfectly pure, is nearly tasteless and
colours; but it is generally yellow, from the presence of some resin, to which it is most probably indebted for its virtues, as when purified by means of ashes from all resin, it seems devoid of power, and the fibritage virtues sacrificed to it belong in reality to the acid resin. Pepper is much more employed as a grateful condiment than as a medicine, and it appears to be essential to the process of digestion in hot countries. Of 50,000,000 pounds of pepper collected, one-third only goes to Europe; the greater portion being consumed by the Chinese. Its moderate use with cold raw vegetables or other substances difficult of digestion is to be approved; its employment in excess is hurtful to the liver, and a very large dose may prove fatal, not only by exciting inflammation of the stomach, but by an impression on the nervous system. Black pepper readily poisons hogs.

Whole pepper is a popular remedy among intermitten feverers, and impure pipern is used beneficially in like cases.

PIPERACEAE. A small natural order of incomplete Exogens, is composed of climbing or creeping plants with alternate or opposite exstipulate leaves, jointed stems, and spiked naked flowers consisting of an ovary containing a single erect ovule, and of from two to an indefinite number of stamens. The fruit, when ripe, is more or less fleshy, indehiscent, and contains a single seed filled with albumen, on the outside of which, enclosed in a vitellus, is a minute embryo. Justieiu originally regarded these plants as members of the Urticaceae order; but afterwards separated them, in which he has been followed by all botanists. There is however some difference of opinion as to their class, some regarding them as Exogens, and others as Endogens. See Loddby's Natural System, ed. 2, p. 183, for an account of these opinions. The general properties of the order are aromatic, as in the peppers of the shops. [PIPER.]

Analysis according to Liebig:—Carbon, 69.78; hydrogen, 6.69; oxygen, 19.43; azote, 4.10.

PIPILO. [TANAGRIN.] PIPOWDER COURT. By the common law every owner of a fair or mart (Market) is bound to hold a court for the decision of matters arising therein. The court being instituted principally for the convenience of the itinerant dealer, in Norman French 'pied poulteux,' was called the court of pipowders, 'emulated powder.' The court is held before the owner of the fair or market, or his steward, who, by 17 Edward IV., c. 2, is prohibited from entertaining any action unless the plaintiff or his attorney swear that the house of action is not within the precincts and during the time of the same fair or market. Before that statute these courts appear to have emulated those of Westminster Hall in seeking to extend their jurisdiction; and in the preceding reign, W. Larke, the servant of a barges company, was arrested in the fair of the abbey of Westminster. He was transferred by his creditor, Mar- gerio Janys, to the Fleet, where he remained till, by the interference of the House of Commons, he obtained his discharge. (4 Rot. Parl., 337.)

This court in its turn has been gradually enroached upon by the superior courts, and is now fallen into nearly total disuse.

PIPL. [GIULIO ROMANO.] PIPIA. [PIPIRE; PIPERIN.]

PPYPRIDAE, the name given to a family of Dentirostres, by Mr. Vigors, who remarks that those birds which we denominate Chatterers, and which form the genus Ampelea of Lin- naeus, are usually placed in a separate species. They, however, and he confesses that, from the general affinity they appear to bear to it, he had felt, and when he wrote his valuable paper 'On the Natural Affinities that connect the orders and families of Birds' (Linn. Trans., vol. xiv.), did, however, still feel considerable doubt whether this was not their natural station. A strong affinity however, on the other hand, seems, he observes, to unite them with the wide- gaped Pipers, and some of those other groups whose bill, broad and depressed at the base, appear to come in contact with the earlier divisions of the Merulidae, and the extremes of the Fiscrostræes, which precede it. The general rule of placing groups in a conterminous situation, according to what appears to be the predominance of their more important characters, inclining him however to arrange the birds of which he speaks provisionally among the Pipridae, at the extreme termination of the Merulidae. In his view of the case at that time, the characters in which they accord with that family, and approximate the extreme groups of the preceding tribe (Musciatydæ), appear to predominate. More accurate knowledge, he adds, will clear away these and similar difficulties.

Thus much Mr. Vigors observes when treating of the family Merulidae. He next treats of the Sylviidae, and, on leaving that family, he remarks that the true Wrens of the Sylviæ display in their general and essential habits so close a similarity to Parus, Linn., the Titmouse of English naturalists, that he thinks we may at once acknowledge the affinity between the latter family and that of Pipridæ, upon which he enters by means of the Paru. 'Who is there,' says Mr. Vigors, 'that has not been attracted by the interesting manners of both these familiar visitors of our domestic haunts, and, at the same time, has not been struck by their resemblance? The penduline Titmouse, P. pendulina, Linn., longer and more tailed than the Paru in general, seems to be the connecting link between the families. That species is immediately met by the genus Tyrannulus of M. Vieillot, which, in the name of Rollet's Mills, is confused by M. Buffon on the American species of which it is composed, happily illustrates the affinity which I have ventured to point out.' Mr. Vigors further remarks that the same affinity is indicated by the antient British name of the Golden-Crested Wren, which is called in Common Speech 'the Sprigge, that is, according to Ray, Parus chrysocephalus; and he proceeds to trace another affinity between the conterminous groups of Wrens and Tit- mice in their mode of nidification. The greater portion of both, he remarks, make their nests in thick forests; but those groups which more nearly approach each other, viz. Regularus, Tyranus, and Parus pendulinus, suspend theirs from the branches, leaving the orifice at the centre, and introduc- ing the materials of which it is formed with corresponding ingenuity and elegance. The contiguity of this

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small group, he adds, to those of Carduelis, Plocus, and Xanthorhynchus, in the succeeding tribe of Controstes, seems to point out the cause of this singular affinity. But though the affinity between these birds has been acknowledged by scientific men as well as by common observers: the former, Mr. Vigors remarks, have generally ranked the Pari in a different tribe, and some indeed, he adds, have even ranked them in a different order from the Sylviidae, in consequence of their absence of the tarsal tendon or bib. But the tribe, in their body, which consists chiefly of insects, and the similarity of their habits, give them a more natural connection with the families among which I have now ventured to point out their place, than with the hard-billed and granivorous birds, where they are generally stationed. Here it may also be observed, that they form part of one of the extreme families of the tribe, and are immediately connected with a group of the preceding family of Sylviidae, which passes on to the Controstes, the succeeding subdivision of the order. They thus are brought into contact with the tribe to which the strength and the conical structure of their bill indicates a conformity; while, at the same time, they maintain their station among the groups where their manners and general economy strictly place them. Vigors goes on to observe that the Pari, which thus introduce us into the present family, lead on to the more typical groups of the Linnean Piprice, with which they bear an acknowledged affinity, and which general appearance. He thinks, that the genus Pardalotus, Vieill., which is the representative of the latter group in Australasia, appears to connect these two allied groups of the Old and New World, by exhibiting the nearly divided feet of the one and the partially curved bill of the other. Here Mr. Vigors is of opinion that Rupicola, Briss., and Phialarota, Vieillot, come in: and here, as he had already observed when speaking of the Thrushes, he apprehends that all those groups will be found to assemble and be connected with Ampelia, Linn., and generally denominated Berry-eaters and Chatterers; such as Bombycilla, Briss., the true Ampelis of authors, Casma-rhynchus, Tenam., and Procnias, Ill. To these the genus Querula of Vieillot may, he thinks, be added. ‘This group,’ says Mr. Vigors in conclusion, ‘the type of which is the Muscicapa rubricollis of Gmelin, is strongly allied by its bill to the foregoing genera, while its habits equally ally it to the family of Muscicapid, which follows. The interval between the present groups and those of the Pari, where we entered on the family, appears to be filled up by a race of birds peculiar to New Holland, and hitherto uncharacterised, of which the Muscicapa pectoralis, Lath., is the type. These, uniting many external characters at least, both of the Berry-eaters and Flycatchers, exhibit also in general appearance a considerable resemblance to the Pari, and will be found, I conjecture, to be the connecting bond between all these groups. The affinity between this last family of the tribe and the Muscicapidae, which first met our attention as we entered it, has already been observed, when I spoke of the separation of the broad-billed Chatterers from the Thrushes: and thus, equally as in the former tribe, we may recognise the completion of a circular succession of affinities between all the families of the Dentirostres.’

M. Lesson, who adopts Mr. Vigors’s family, makes the Piprice consist of the genera Rupicola and Calyptrona (which will be treated of in this work under the title Rupicolinae), Pipra, Pardalotus, and Pachycephala. Mr. Swainson does not admit the family Piprice, but he makes the Piprina a subfamily of the Ampelidae. [Piprina.]

PIIPRINE. Mr. Swainson’s name for the Manakins, which he makes a subfamily of the familyampelid, Frutto-eaters or Chatterers, and thus characterizes:—Size small. Feet elongated, slender, weak. Bill very short: the upper mandible much curved. Mr. Swainson is of opinion that the Piprina, called manakins from their diminutive size, which is seldom larger than that of a sparrow, constitute the subtypical group of this family. ‘Here again,’ says Mr. Swainson, ‘we find the richest tints of yellow, orange, crimson, and blue, relieving the olive green or deep-black plumage of these elegant little birds. They are strictly American, and chiefly occur in the deep virgin forests of the tropics, but they are much more social than the Cotingas. They live in little bands, are continually in motion, and feed almost entirely on the large soft berries of the different species of Malostoma. The nest of one species, P. pareola, is often built in the fork of a shrub, in such an exposed manner that the female can look all round and watch the approach of danger; we found one in such a situation in the forest of Pitanga, a single leaf of a large pepper-plant (Piper) forming a kind of umbrella shade over the female, which was sitting, and did not rise from her nest as we passed onward. The manakins are easily known by their weak and slender feet, of which the two outer toes are considerably united. By that singular little bird Calyptura cristata, the genus Pipra is united to that of Pardalotus, Vieill., or the spotted manaksins of New Holland. Of a size equally diminutive, these are, nevertheless, distinctly separated from the last by their stronger bill and more pointed wings, while the feet are stronger and perfectly formed, all the toes being divided. Lewin, in his Birds of New South Wales, when describing one species, remarks, that it frequents high forest trees, constantly singing a short but pleasing song in passing from tree to tree. This genus, in all probability, represents that of Dicoecus among the hussuckers, and Euphonia among the tanagers. The subgenus Metopina seems necessary to connect Phainicircus with Pipra; and since there are one or two birds evidently belonging to this division not yet described, which, by their stronger bill, evince a tendency towards uniting with Leiothrix.’

Phainicircus. Pipra (with its subgenus Metopina), Calyp- trona, and Pardalotus, are the genera arranged by Mr. Swainson under this subfamily.

Phainicircus. (Sw.)

Generic Character.—Size and habit of Ampelis. Bill small, rather weak. Wings very short, convex, rounded; the three first quills narrow, and of equal length; the fourth much shorter, and ending in a point. Tail broad, even. Feet short, strong; toes syndactyle; tarsi leathered, on their inner side only, as far as the toes; claws strong, curved. (Sw.)

Example, Phainicircus Carniceri. (Amelips Carniceris, Linn.)

Description.—Five-red, with a bright red cap; back redbrown; breast blood-red; tail-feathers purple, terminated by ruddy-black. Female reddish; abdomen ochraceous; front redish.

The Cararla designate this magnificent bird by the names Arara and Apira.

Localities.—Brazil, Guiana, Surinam.
parts yellow striated with brown; bill brownish; feet yellowish.

Female.—Not differing from the male, except in the absence of the red cap on the head.

Locality.—Brazil.

Description of Pipra Aureola.—Red; back, wings, and tail black; throat yellow.

Locality.—Guiana.

Pipra Aureola.

Metopia. (Sw.)

Generic Character.—Front with an elevated compressed crest. Wings strengthened, very broad. Tail broad, lengthened, rounded. (Sw.)

Example, Metopia galeata. (Pipra galeata, Licht.)

Description.—Black. Frontal crest, directed forwards over the culmen of the bill, rich crimson, which colour is also continued over the head and back of the neck; feet and legs reddish brown.

Locality.—Brazil.

Metopia Galeata.

Calyptra. (Sw.)

Generic Character.—Bill short, strong, robust, shrike-like; the sides somewhat gibbous; the notch deep and tooth-like. Under mandible strong. Wings short, rounded. Tail remarkably small, almost concealed. Feet lengthened, slender, toes syndactyle. (Sw.)

Example, Calyptra cristata.

Description.—Crown red; upper parts brownish or olivaceous green; rump yellow; throat and breast yellowish; abdomen brighter yellow; feet and legs black.

N.B. The hidden part of the feathers is obscure lead-colour, the ends of them only giving the prevailing colour. When the plumage is blown aside or disturbed, the lead-colour appears.
posed in such a manner that they may mutually support one another, and that none of them may be cut off by parties of the enemy passing unobserved between them. The chain must of course entirely surround the position, unless the latter should in any part be secured by other obstacles which it may be impossible for the enemy to pass or turn. The nature of the ground determines the class of troops which should be employed; but in general both cavalry and light infantry are appointed to get into position by one of the rivers or streams, in by some other obstacles which it may be impossible for the enemy to pass or turn. The nature of the ground determines the class of troops which should be employed; but in general both cavalry and light infantry are appointed to get into position by one of the rivers or streams, in

...
PIRANE'SI, GIOVANNI BATTISTA, born at Venice, in 1726, was one of the most distinguished artists of the late eighteenth century, and his name is still familiar to us. At the age of eighteen, he was sent by his father (who was a mason) to study architecture at Rome; to which he devoted himself with such enthusiasm as to thwart his parent's intentions for him, and to those cravings which he had been accustomed to satisfy, he refused, observing that Rome with its monuments was the adopted land of his affections—the birth-place of his talent. On this, his father withdrew his allowance, but instead of being thwarted, he recommenced his studies. On an arch, and to this subterraneous artifice, the artist soon after (in 1741) brought out his first work on triumphal arches, bridges, and other architectural remains of antiquity. This production instantly established his reputation, the engravings being treated with such mastery, and being altogether so decidedly superior to any former representations of similar subjects, as to make an epoch in chalcography and architectural delineation; which latter had till then been almost entirely very coarse, tasteless, and insipid, and nowhere more so than in Italy itself. With occasional exaggregation of chiaroscuro and effect, there is great vigour of execution in Piranesi's productions, which may partly be ascribed to his singular manner of working, it being his custom to draw his subject at once upon the plate itself, and complete it almost entirely by etching in aquafortis, with very little assistance from the graver. Hence his works are marked by a freedom and spirit that can otherwise hardly be preserved. The same circumstance also enables him to adopt any portion of the subject, which enabled him to produce, within less than forty years, about two thousand engravings, most of them of very large dimensions and full of detail.

It is true he was not wholly without help from other hands, for all his children (three sons and two daughters) were brought up by him to assist him in his labours; and he had likewise several pupils, among others Piroli, a name of which the numerous engravings which they executed, are inconceivable, as it is evident from the peculiar manner and spirit which pervade his works, and which have never been caught by any of his scholars, that all his plates must have been executed chiefly by his own hand. The following is a list of his principal works:—"Architecture Romana, 208 plates, 4 vols., atlas folio; 'Fasti Consulares Triumphalesque Romanorum; * Antichita d'Albania, 35 plates; 'Campus Martius,' &c., 54 plates; 'Magnifica di Roma e sua Reggia,' one of the most splendid designs; * Carceri d'Invenzione, 16 plates, filled with the most correct; * A Collection of Antient Statues and Busts, 350 subjects; 'The Trajan and Antonine Columns; 'Antiquities of Herculanum and Pompeii.' A complete set of his works (comprising many not here enumerated) amounts to no fewer than twenty-nine folio volumes, many of which are of unusually large dimensions, some of them being done on double elephant paper, and the plates opening to ten feet in length. Their contents afford an almost inexhaustible mine of antiquity, both as regards architecture and sculpture; and indeed his 'Magnifica' alone, containing as it does many specimens and fragments of ancient architecture till then little known, and so different from the usual routine examples of the ordinary artist, are of the utmost advantage to pupils. Of these, and other specimens of ancient art engraved by him, such as vases, candleabra, &c., have been since copied in later works, yet even where they have been correctly and tastefully delineated, they are immeasurably inferior to the same subjects as touched by Piranesi.

In addition to his other numerous and extensive labours, he executed one or two of the plates in the 'Works' of Robert Adam, the English architect, where their superiority to those of any other artist is well known. He seems to have executed much as a practical architect; the wonder is, that he should have found time to accept any professional engagements of the kind. Nevertheless he did so, and among the churches he designed in Italy, the Palma, the church of Santa Maria della Pietà, and the priory of Malta. It is in this last-mentioned edifice that a monument by Angioli, a life-sized statue of him, has been erected to his memory; an engraving from which is contained in the second volume of the 'Library of the Fine Arts,' a publication containing many valuable papers, and to which we are indebted for some of the particulars above given. Piranesi died at Rome, November 9, 1778.

PIRAME'SI, MELANIAS; MELANGIUS, vol. xv, pp. 76, 77.

PIRAME'SI, Dr. Leach's name for a genus of Crabs, placed by M. Milne Edwards among the Canceriana Arqueis, which have no appendages elongation on the sides of the carapace, which is much wider than its length, arched in front, and strongly truncated on each side posteriorly.

M. Milne Edwards observes, in common with most other writers on the Crustacea, that the general form of Pirimela differs but little from that of many Canceriana; but he adds, that in other points it is far separated from them.

Carapace regularly arched on its anterior moiety, and strongly truncated on each side of its posterior moiety; much wider than it is long; convex, and strongly bossed. The front narrow and armed with three pointed teeth. The latero-anterior borders are directed very obliquely backwards and upwards, and are armed with four compressed and triangular teeth. The orbits present two teeth and two fissures above, a sharp tooth at the external angle, and a fourth at the internal and inferior angle. The internal extant antennae are bent up in front, as in Platycerini. The external antennae are very long, but their first joint, which is lodged in a gap of the orbital angle, is very short, and is not prolonged nearly so far as the basiangular joint of the internal antenna; the moveable stem of these antennae is directed inwards, and presents the same disposition as in the Crabs, &c.; but this joint does not exceed its width by one half, and its median suture occupies its three last segments. The anterior feet are small and compressed; the succeeding feet present nothing remarkable. The abdomen of the male is only composed of five joints.

Example, Pirimela delimitculata.

Description.—Carapace smooth, but strongly bossed on the stomatal, genital, and branchial regions, and concave on the posterior moiety. In the hepatic region it is not reaching beyond the level of the middle of the genital region. Pincers furnished with a small crest above, and with one or two carinated lines on their external surface.

Length about 2¼ inches. "

Locality.—Quinte of England, Europe and France.

Pirmelida delimitculata.

PIRMASENS is a well-built fortified town in the Bavarian province of Hohenzollern. It was of small importance till Lewis IX., landgrave of Hesse-Darmstadt, chose it for his residence. In his time it had 900 inhabitants; but he died in 1790, and the wars of the French revolution soon afterwards breaking out, the town greatly declined, and after having several times changed masters in the various sessions of territory that ensued, was at length annexed to Bavaria. It has now about 5000 inhabitants. The palace, the town-hall, the Lutheran school, and the Lutheran and Calvinist churches and public buildings are all modern. There is also a large building for exercising troops in bad weather. There are some vinegar-manufactories, and musical instruments are made. In the year 1733, the duke of Brunswick obtained an advantage over the French near this town. Pirmasens is 13 miles east-south-east of Deux Ponts, and 35 west of Spire.

PIRNA, a town in the circle of Meissen, in the kingdom of Saxony, situated in a beautiful part of the country on
the left bank of the Elbe, 9 miles south-east of Dresden. Most of the houses are built of stone from the celebrated quarries near the town. The principal public buildings are the town-hall, the great church, which is one of the finest specimens of Gothic architecture in Europe, the town hall, painted windows, and the convent church, which belonged to the Dominican convent founded in 1361. The lyceum has been converted into a school. A Roman Catholic school was founded in 1822, and the Roman Catholic church of St. Kunigunda was consecrated in 1823. An admirable orphan asylum was founded in 1813; and in 1830 a new school-house was built, which is one of the handsomest edifices of the kind in Saxony. On the north side of the town, called the inner town, there was formerly a strong fortress, which was dismantled by the Prussians in the Seven Years' war. It was afterwards fitted up as a lunatic asylum, but in 1813 Napoleon expelled the patients, and again fortified it. However the establishment was restored in 1814, on an admirable plan, which may serve as a model for similar institutions. There are flourishing manufactures of cotton, linen, woolen clothes, stockings, hats, leather, ironmongery, starch, &c. Calico-printing is carried on to a great extent. The inhabitants have a considerable trade in their own manufactures, and in the natural productions of the country, among which the Pirna sandstone holds an important place. There are numerous caves and quarries, which furnish the kinds of stone; the first is best suited for grindstones, the second for millstones, and the third for the use of the sculptor and statuary: the last is exported to England. Pirna is celebrated for its statuary: (Hassel, Geographisches Lexikon; Engelhardt, Das Königreich Sachsen, seventh edition, by W. E. a. v. Schlieben.)

PIROV, ALEXIS, born at Dijon, in 1689, studied the law, took his degrees, and practised as an advocate in his native town, but he afterwards forsook the bar, and lived for a time in gay and dissipated society. Being distressed in his circumstances, he repaired to Paris, and employed himself as a copyist, and afterwards wrote for the stage. He wrote some light comedies and farces, which succeeded very well, but he failed in his attempt to write tragedy. At fifty years of age he composed his drama 'La Méromanie,' the best of his works, which established his reputation as a writer. He had been himself in his youth seized by a kind of mania for writing verse, and was therefore a competent judge on the subject. Piron had much ready wit and a great facility for repartee, and his epigrams were very celebrated in his time. He wrote also Tales, Odes, and other light purposes, and composed a defence of the prevailing taste of his age, which was that of the reign of Louis XV. He may be considered as a representative of his time and country, witty, thoughtless, and licentious. He had however a droll propensity for the opposite vice, and he found friends among a higher order of men. Montequieu obtained for Piron a pension from the king of 1000 livres; the count of Livry, Marceps, the duke of Nevers, and other noblemen patronised him, and he was married at the age of a woman of mature years, and lived very happily with her till her death. Piron's sight was very weak, and a fall which he had in the park of the count of Livry hastened his death in 1773. His works were collected without discrimination, and published by Rigole de Juvigny, 7 vols. 8vo. Piron however, before his death, had expressed his regret at the publication of some of his more obscure odes, which had proved a bar to his being received among the literary society of Paris. Whatever the reason, Piron might have been pleased if the book had been at hand, although he affected to disdain it in his writings. The following is his epitaph, written by himself:

"Ex P. Piron, qui me fuit reus, Quod meum est, numeri est, 30,000."
The Etruscans, country to which was considered, might not, after the winter, have moved. The belfry is a round tower, likewise paved with marble, 190 feet high, which deviates from the perpendicular line about fourteen feet. It was erected in the latter part of the twelfth century, by the architects William of Innepreck and Bonanno of Pisa. From the summit there is a splendid view of the plain, the surrounding mountains, and the sea. The Campo Santo, or cemetery, constructed in the thirteenth century, by Giovanni di Pisa, is a long parallelogram, 486 feet by 134. The interior, the walls of which are covered with fresco paintings, chiefly by Giotto, Orgagna, and Memmi. The paintings are for the most part greatly damaged, and some are entirely obliterated. [Nicola di Pisa.] A series of engravings of the paintings has been published. (Rosini, *Piture del Campo Santo di Pisa, con l'indicazione dei Monumenti di Belle Arti colà raccolti*, 1816.)

Several ancient sculptures and other remains of antiquity are found in the territory. One of the most remarkable is that of the Countess Beatrice, the mother of Matilda, of Alagoni, Pignotti, and of the celebrated surgeon and professor Vecca, which last is the work of Thorwaldsen. The Italian cities mentioned are—1, the church of S. Stefano, belonging to the military order of that name, which was founded in 1261, by the grand duke Cosimo, for the purpose of crusading against the Barbary pirates; 2, that of S. Frediano, which is rich in paintings; 3, S. Nicola, with a handsome belfry, the work of Nicola Pisano, and S. Michele in Borgo contains the monument of Guido Grandi, a celebrated mathematicus and antiquarian, and contemporary of Newton, whose MSS., in forty-four volumes, are in the university library; 4, S. Maria della Spina, a handsome church, with good paintings and sculptures. There are many other churches besides these. 6, The palaces of Lanfranchi and Lanfredine; 7, the Torre della Pieve, where annual consuls and senari were elected; 8, the Ologio, on the Piazza dei Cavalieri; 9, the university buildings, the library, observatory, and botanical garden; 9, the great hospital; 10, the Loggia, or old Exchange. The Certosa, or Carthusian convent and church, is in a pleasant situation, about two miles east of Pisa. The vast farm and forest of S. Roisoro, belonging to the grand-duke, three miles from Pisa, near the sea, is charmingly situated. It is, perhaps, the most extensive space of the original stock of which were brought to this spot in the time of the Crusades. The mineral baths, called di S. Giuliano, four miles from Pisa, at the foot of a mountain, have long been esteemed, and drove by many who frequented them in the middle ages by the countess Matilda. The present buildings are of the last century. They are not so much frequented as they used to be, people resorting in preference to the baths of Lucca, the situation of which is more agreeable and healthy, especially in summer, when the air of Pisa and the neighbouring plain is not considered wholesome, though it is not so deleterious as it once was, owing to the drainings that have been made, and the improvements effected in cultivation of late years. During the winter the climate of Pisa is extremely mild though rainy, and is well suited to persons with weak lungs.

### History of Pisa

The origin of Pisa was a matter of dispute. Sallust, Plutarch, and others, could not ascertain who were its original inhabitants before it came into the possession of the Etruscans. (Servius, x. 179.) Strabo and Pliny give a Greek origin, and consider it to be a colony of Pisa in Elis, and Virgil (Aenid, x) adopts the same tradition. Lycurgus admits that Pisa was taken by the Tyrrhenians from the original Ligurian inhabitants. Pisa was on the border between Etruria and the country of the Ligurians, and was probably colonised by the Etruscans when they extended their power to the coast of the Maestr. It is not reckoned among the twelve principal towns of the Etruscan confederation. It underwent the same vicissitudes as the rest of Etruria, and became subject to the Gauls under the Gallic commanders, who retained, like the Etruscan towns, its municipal form of government. Livy (xlv. 43) mentions that a Latin colony was sent to Pisa, at the request of the citizens, who offered a part of their territory to the colonists about 179 B.C. Nothing more is said concerning Pisa in Roman history, but we find that it had bishops at the beginning of the Christian era. Pisa passed successively under the dominion of the various conquerors of Italy, the Goths, the Longobards, and the Franks. Under the last it governed itself, like most other Italian towns, until it achieved independence by a formal nominal allegiance to the emperors and their great feudatories the counts or marquises of Tuscany. In A.D. 874, the Pisans appeared in arms against the Saracen pirates from Africa, who were scouring the Mediterranean; and, after having plundered the Roman coast, and made many prisoners, landed at S. Pietro in Grado, about three miles from Pisa. The Pisans attacked them by land whilst their ships came out against them ; but the Saracens, who escaped, leaving their prisoners behind, at which the Pisans restored to Rome. In the year 926, Hugo of Provence came to Pisa, where he received the homage of the great feudatories as king of Italy. In 965, Otto I., on his return from Rome, stopped at Pisa, and was so pleased with his reception that he granted various privileges to the town, and several noblemen of his retinue were so delighted with the country that they asked his leave to remain and settle there. This was the origin of seven noble families, which afterwards figured in the history of Pisa, namely, Casamatti, Orlandi, Ripafrattii, Visconti, Vechchioni, Guasmani, and Duodi. From that time Pisa was considered one of the principal cities of the emperors. About A.D. 1003 the Pisans sent their galley to the coast of Pisa, against the Seljuk Turks, who had invaded the country, and who vexed the Christians of Palestine.

In the following year began the long struggle between Pisa and Muecat, the M. the administration. The Pisans, in the final conquest of that island by the united Pisans and Genoese, in the year 1022, after which the Pisans divided Sardinia into four provinces, or giudicati, namely, Orbona, Castelsardo, S. Pietro, or Sassari, Arborea, which they appointed giudici, or governors, from the principal families of Pisa, who in the course of time became nearly independent. At this period Pisa was a republic, having a senate, but it appears that the bishop had also a considerable share in the administration. The history of Pisa extended on the side of Florence as far as Empoli, and along the coast to the south-east as far as Piombino. Lucca bordered it on the north, and frequent dissensions arose between it and Pisa. The harbour of Pisa was formed by a bay which is now filled up, at a place called Calambrone. [ARNO.] In the year 1030, the Pisans sent a fleet of 50 galleys to Carthage (so say the chroniclers, but not to Favigna, as Artemio says), and took the Saracens, and in 1038 they likewise took possession of the island of Lipari. In the year 1058, the Moors of Barbary again invaded Sardinia, but the Pisans sent a large armament, under the command of the Pisan. The Pisan, the same time subject, at least in part, the island of Corsica, and in 1093 or 1091, Pope Urban II. made a grant to the Pisans of the whole island as a fief of the Apostolic See. (Tronci, *Memorie di Pisa.* In 1062, Pisa sent assistance to Robert Guiscard, the Norman duke of Apulia, against the Saracens. In 1063, the Pisans sailed to Palermo, which was occupied by the Saracens, and, after a sharp engagement, they entered the harbour, and carried away the shipping, with a rich booty, part of which was employed in building their splendid cathedral. The Pisans however did not retain possession of Palermo, which soon fell, with the rest of Sicily, into the hands of the Normans. About the year 1070 began the conflict between Genoa and Pisa, which continued, with various interruptions, for more than two centuries, and ended in the downfall of Pisa. Commercial jealousy, and the possession of Corsica, which the Genoese aimed at, were the causes of the war. The respective claims of the Genoese and Pisans upon Corsica have been a matter of much historical controversy. (Tunucci, *Dissertatione del Domino Antico dei Pianisti sulla Corsica; Fianinio del Borgo, *Dissertazioni Pirane; Note sugli Annali Genovesi di Maligni, Mantua; Jannona, *Annotazioni di Storia della digna.* In 1089, the two states, having made peace, joined their fleets, and, sailing to the coast of Barbary, took the town of Mahadiah, which is also called Africa by the galley pilots, and, in the same year, took Tunis, which was then the capital of a considerable Saracen state. They obliged the king to pay a large sum of money, to release all his Christian slaves, and to promise never more to cruise
with his privates in the Italian seas. About this time the Countess Matilda made several important donations of lands and castles to the see of Pisa, the dioceses of which are given by Tronci. Countess Beatrice, Matilda's sister, died in death outside of the cathedral. Donizo, in his Life of Matilda, represents Pisa as a great and flourishing emporium, whither ships and merchants from all parts of the Mediterranean resorted:

"Qui perch' in Pisa, vicino monastero di San Martino, Torcella, Lybriaco, quoque Patibla, Sordida; Caius, es sus insanantes turbo." 

It was in this period of their prosperity that the Pisans completed their magnificent monuments of art, the baptistery, the belfry, the basilica, and Campano Santo. The Pisans sent a fleet of 120 sail to the first crusade, and their soldiers and sailors assisted at the taking of Nicomedia, and afterwards at that of Antioch, as a reward for which they obtained a street of that city to establish a factory in. In 1099 the Pisans were at the taking of Jerusalem. In the following year they sailed into the sea of Marmara, and obliged the emperor Alexius to sign a treaty, by which he allowed them to establish a factory at Constantinople, with ample privileges. The Pisan fleet returned home in triumph, and their city was then entirely surrounded by walls.

In 1114, the Pisans sent a large armament, the largest that had ever been sent from their city, to the Greek islands, which were in the possession of the Moors, and which had become a nest of Mohammedan pirates. The fleet consisted of 300 ships of various sizes, having on board 35,000 men and 900 horses. A great part of the squadron consisted of Sicilian galleys and a smaller contingent from the Pisan possessions in Sardinia. The archbishop of Pisa, Pietro Moriconi, himself commanded the expedition, of which we have an account in a curious Latin poem written by his own secretary. Laurentius Vannesor Boccaccio, and published by Ughelli. Several of the descriptions in this poem bear so striking a resemblance to some in Tasso's 'Gerusalemme,' that suspicions have arisen that the Italian poet may have been acquainted with the MS. of the document. In April, 1117, the Pisans, in conjunction with Ramyunvo IV., count of Barbastro, accomplished the conquest of the Balearics, took the son of the Moorish king prisoner and brought him to Pisa, where he afterwards became a Christian. Unfortunately for the correct understanding of all those important transactions in the tenth, eleventh, and twelfth centuries, we have no history of Pisa properly speaking. Whilst Genoa, Venice, and Florence have had accomplished historians, Pisa has neither public chroniclers and detached memoirs, although numerous authentic documents must exist in the archives, from which a history of Pisa might be written. Pisa rose early to power, and she also fell early. In the furious period of her rival, which may account for her history having been neglected.

In the year 1137, the Pisan fleet went to the coast of Naples to aid the pope and emperor against the Normans and Count of Amalfi, where it is reported that they found a copy of the Pandects, from which all other copies made in Italy were derived. This assertion however has been much controverted. (Fenucci, Dissertazione Istoria Critica sul Ritornamento delle Pandette, in his Storia dei tre celebri Popoli Marittimi dell'Italia, Pisa, 1821.)

In the war between Frederic Barbarossa and the Lombard cities, Pisa sided with the emperor, and afterwards sent a fleet of fifty galleys to accompansing him to the Levant on his crusade. In the following century the Pisans, as Guibelins, took the part of Frederic II. against the pope. In 1258, peace was made between Genoa and Pisa, through the mediation of the Alexander IV. of the Pisans and Genoa. Oberto Doria, the first naval officer of the state, commanded the Genoese. In the year 1248 he sailed out of Genoa direct for the port of Pisa with 55 galleys, and was joined off the rocky island of Meloria, on the Ligurian coast, by the Leghia of 90 more galleys, under Benedetto Zaccaria, which he ordered to conceal themselves behind the island. The Pisan fleet came out, having on board the flower of the fighting men of Pisa. The duel and desperate struggle which ensued has still been given to the public by the galleys which attacked and took the admiral ship of Pisa, which bore the great flag of the republic. At the same time the thirty galleys which lay concealed behind the island of Meloria appeared, and aided the Pisans in flag and rear. The Pisans fought desperately till night, when a few only of their ships escaped into the harbour. They lost 3000 men killed or drowned, and 13,000 were carried prisoners to Genoa, where they were confined in chains, and where many of them were executed. Henceforward Pisa never attempted any more war against the Genoese. The Genoese would have restored the prisoners, if Pisa had agreed to give up Sardinia to Genoa; but it is said that the prisoners themselves declared that they would not purchase them except at such a price. In 1296, Conrad Doria attacked the Pisan factory, destroyed its towers, and sunk ships filled with stones at the entrance. (Giv. Villani, Cronaca, b. vii., ch. 141.) From that time Pisa completely lost its power. In the meantime her sovereignty lasted for the space of four centuries, and Venice and Genoa were left alone to dispute for the naval supremacy in the Mediterranean.

In the meantime Pisa was distracted by domestic feuds. Florence, at the head of the Guelphs of Tuscany, assailed it by land, and in their distress the Pisans appointed as their captain-general, for ten years, Ugolino Count Gheraldesca, a Guibeline feudal baron, but allied by marriage to the Guelphs, so that he might, from his own power, favour alternately Guelphs and Gui- belines, while he proscribed the more independent leaders of both parties. He was opposed by the archbishop Ruggerio degli Sciri, a staunch supporter of the Ghibelines, and the key of which was entrusted to the archbishop, who after a short time threw it into the river, and left the wretched prisoners to die of hunger. This catastrophe has furnished the Pisans with one of the most powerful and appalling descriptions.

The Pisans then appointed Guido da Montefeltro their captain-general. He recovered by force the strongholds which Ugolino had put into the hands of the Guelphs of Florence and Lucca, and his troops, armed with crossbows, became the terror of Tuscany. Peace was made in 1293, and in 1299 Pisa made peace with Genoa also. Pisa continued attached to the Guibeline party, and at the death of the emperor Henry VII., in 1313, found herself exposed to the attack of all the Guelphs of Tuscany. The Pisans gave to command to Ugucecnice della Fagiuolina, a captain of some renown, who took Lucca, in 1314, and afterwards defeated the Florentines in the battle of Montecatino. In 1325, however acted as a tyrant both to Lucca and Pisa, until an insurrection broke out simultaneously in both cities, in April, 1316. Pisa resumed her republican form of government, and in 1322 exiled fifteen of the Guibeline nobles, and made them offer the Pisans a yearly tribute. In the meantime the massacre of the Pisans took place in Sardinia, and the insurgents offered the island to Alfonso, the son of Charles II., king of Aragon. Pisa made a last effort to preserve Sar- dinia, but was obliged to give it up to the Aragonese, in 1326. In 1328 Cattavolzio Ciacnocrini, the great Guibeline leader, took Pisa by surprise, but his death soon after restored it to freedom. In 1341 the Pisans, who still retained much of their martial spirit, defeated the Florentines, and took possession of Lucca, and kept it till 1365, when the emperor Charles IV. obliged them to restore Lucca to its independence.

Pisa was now distracted by internal feuds between the democratic party, at the head of which was a merchant family of the name of Gambacorta, supported by Florence, and the Guibeline nobles and their adherents, whose party was called the Rasputi, and who were assisted by the Viscioni of Lucca. The Rasputi held for about 200 more years, but finally fell in 1368. In the meantime the Pisans also had enemies in their own city. In 1369, they were carried prisoners to Genoa and Sardinia, and it is reported that 1200 of their number were murdered. Upon this the Guibelines took their revenge on their former houses to Tolomane, a port in the Maremma of Siena. Another revolution soon broke out at Pisa, and the party of the Gambacorta was restored; but Gian Galeazzo Visconti, Duke of Milan, caused Pietro Gambacorta to be murdered by his own secretary Jacopo Appiano, who made himself independent of the government of Pisa.
Pisces Australia presently to be noticed. (See Grotius, in his notes on Aratus.) The constellation consists of two fishes linked by a string attached to their tails: they are not placed next to each other, but the upper, being close to Andromeda, the lower one under the wing of Pegasia. The rectangular figure mentioned in Pegasus will be a guide to the position of the two fishes: the line of a Andromeda and y Pegasia being parallel to the body of one fish, and that of Pegasia to the body of the other.

The principal stars are as follows:—

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Charles Siraone was the greatest poet of his time. He was born at 1504.

The Florentines besieged Pisa, but were repulsed, and the inhabitants were reduced to the greatest distress for want of provisions. Giovanni Gambacorta, who had been always favourable to the Florentine connection, and named him his captain-general. The Florentines blockaded Pisa for about a year, and when the inhabitants were reduced to the greatest distress for want of provisions, Giovanni Gambacorta secretly treated with the Florentines, and agreed to open to them the gates for 50,000 florins and the country of Regue, which he did on the night of the 8th November, 1406. Gino Capponi, the commissioner of Florence, behaved with great humanity; he maintained the strictest discipline among his troops, and he introduced into the town, together with his soldiers, a number of waggon-loads of bread which he distributed gratis to the famished inhabitants. But the pride of Pisa was too much hurt to be reconciled to the yoke. The principal families emigrated to Sardinia and Sicily, and the Florentines besieged Pisa, but were repulsed, the women themselves assisting their menfolk in repairing the fortifications. In 1504 the Florentines resumed the siege, but they failed again. At last, in 1509, they formed a close blockade around the town, and Pisa was obliged to surrender through famine. A second evacuation then took place, the wealthier families preferring exile to the loss of independence. Since that time Pisa has remained subject to Florence or to the rulers of Florence and of the rest of Tuscany.

The university of Pisa has been the chief means of maintaining some life in the town. It is divided into three faculties, theology, law, and medicine; it reckons among its professors several distinguished men, and is attended by about four hundred students. In 1839 Pisa was chosen for the place of assembly of the commissions of several parts of Italy. Above 400 came, besides several foreigners. They were classed into six sections, each of which had its separate meetings. Memoirs were read, and prizes offered for the next annual assembly, which was appointed to take place at Turin in 1840.


PIBES (the Fishes), the last constellation of the old zodiac. There is in the mythological stories (which are of worthy of note) a confusion between this constellation and...
PISICOLLA. one of the names for the Hirudo Piscium
(Harmothoe, Sav., Ichthyobdella, Blainv.), which infests
fish, especially the Cyprinidae. [Linnæus, vol. xii., p. 392.]
PISIDIA (Thrace) formed the northern part of the
Syrian and Roman provinces of Pamphylia. [Pamphylia.]
The name of Pamphylia was confined to a narrow slip of
land along the sea-coast; while the mountainous country
including Pisidia, to the east of the Anti-Taurus. In the
mountains, which formed a part of Mount Taurus, the Pisidians maintained
their independence under the Persian empire. (Xen.,
Ajab, i. 9, § 14; ii. 5, § 13; iii. 2, § 23.) Neither the
Syrian kings nor the Romans were able directly to subdue them
though the latter obtained possession of some of their towns,
for instance, of Antiochsea, where a Roman colony presen-
sessing the Jus Italicum was founded. (Dig., xii, 15.
8, § 10; Plin., Hist. Nat., v. 24.) In the time of Strabo
the Pisidians were still kept in a state of semi-autonomy,
and supported themselves by plundering their neighbours.
(Strabo, xii., p. 570.)

We know very little of the physical geography of Pisidia,
or of the situation of its towns. Mr. Fellows, who visited
the western part of the country in 1836, informs us (Excur-
sion in Asia Minor, p. 165) that the rocks are generally
of marble, and some of common limestone with veins of mar-
ble running through them in all directions. Mr. Fellows
states that* the most singular features in this district are
the mountains of volcanic dust, which he saw at 10 miles
distant, looking as if they were smoking; this appearance
being caused by the sand, which with every little wind is
blown into clouds, and carried into the air, and along the
valleys. Out of these hills rise jagged points of marble
rocks, each of which forms a nucleus of the drifting sand.
The whole of this light sand or dust is tufa, the dust of
the pumice-stone, and a volcanic production; the decompos-
ted lime in has many parts mixed with this tufa and formed
hills of Roman cement.

The chief towns of Pisidia were Antiochsea, Sagalassus,
and Selge.

Antiochsea, which, as already mentioned, was a Roman
colony, was situated in the north-western part of the
country. It was founded by a colony from the Magnesians
on the Maender. (Strabo, xii., p. 577.) It was visited by
St. Paul and Barnabas, and it appears from front the nar-
vative in the Acts of the Apostles (xiii., 14-51) to have been a
place of considerable importance. Its site is uncertain.

South-west of Antiochsea was Sagalassus, which is spoken
of by Arrian (i. 28) as a considerable city. Strabo (p. 569.
Carab.) says he called it Selge, and it is a day's
journey from Apamea: he adds that from the acropolis
to the town is a descent of near 30 stadia. The ruins of
Sagalassus, according to Mr. Fellows (p. 167), are very
extensive, consisting of seven or ten amphitheatres, and
three or more long buildings, ornamented with cornices and columns,
and with rows of pedestals on each side. Mr. Fellows
also saw there a most beautiful and perfect theatre on the side
of a higher hill than the rest of the ruins, and remarks that
the whole town is a pile of superb public buildings,
aranged in excellent taste both for seeing and being seen.
The town has no trace of walls, but its tombs are to be seen
carved in the rocks for miles around, with much architec-
tural ornament.* These ruins are called by the Turks
Boodroom, and were visited by Lucas (i., 180).

South east of Sagalassus was Selge, the most important
town in Pisidia. Selge is said to have been first founded
by Cassius and afterwards by the Laconians, and in con-
sequence of its good government soon became a large and
flourishing town. Strabo says (xii., p. 570) that at one
time it contained a population of 20,000 inhabitants. When
Alexander marched through Pisidia, the inhabitants of
Selge were pleased to him and gave him favourable terms
from him. (Arrian, i. 28.) The territory of Selge, though mountainous, was,
according to Strabo, very fertile. It produced abundance of oil and wine, and afforded pastu-
rage for great numbers of cattle. Selge was the source of
great number of timber-trees, of which the styrax
was reckoned the most valuable. Mr. Fellows visited the ruins
of a large city, situated about 10 miles north-east of the vil-
lage of Bujak, which are in all probability those of Selge. Mr. Fellows describes these ruins as set at the end
of a ridge of mountains of white marble, which terminated
abruptly in a deep and rich valley, and having only one
side accessible, the other three rising perpendicularly per-
haps 1000 feet. Mr. Fellows says (p. 172), that he rode
for at least three miles through a part of the city, which
was one pile of temples, theatres, and buildings, vying
with each other in splendour. He also states that he could
scarcely guess the number of temples or columned build-
ing in the town, but that he certainly traced fifty or sixty;
and in places where there were no remains above the sur-
face he frequently saw vast arched vaults, similar to those
forming the foundations of great public buildings.

PISIDIA. [Porcellianas.] PISIDIUM. [Pisum. (Zool.og.)]
PISCIS AUSTRALIS or AUSTRINUS, or NOTIUS
(The Southern Fish), one of the great tonno. This fish
sits directly under Aquarua: the stream from the water-pot of
the latter constellation finishes at the mouth of this fish. It
contains a remarkable star of the first magnitude, Fomal-
haut, which only just rises above the horizon in these lati-
itudes; when on the meridian, it is nearly in the same
vertical circle with a and fl Pegasus.

The principal stars are as follows:—

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PISCIS VOLANS (the Flying-Fish), one of Bayer's
southern constellations, situated between the South Pole
and Arg. Its principal stars are as follows:—

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PISISTRATIDÆ. Hippos and Hipparchus were the
two sons of Pisistratus, after whose death Hippos, the
elder, succeeded to the rule. Thucydides tells us that the
general opinion in his time was, that Hipparchus succeeded
his father; this however he asserts to be a mistake, although
in the same chapter (Thucyd., vi. 34) he observes incidenti-
ally that Hipparchus was not unpopular in his government,
thereby implying that he had some share therein.*

Thucydides gives the brothers a characteristic for encouraging
manly virtue and cultivation (apetirxov ev éiav), for success
in war, for piety, and for a small tax. He says they
then levied a rate of five per cent. on produce (7a yxvóoov),
and that they rather interfered in the appointments to
offices than with the administration of the laws themselves.
He gives Pisistratus, son of Hippos, as one among others
of the family (ácroúv) who served the office of archon.
Hipparchus, the younger son, lost his life by a conspiracy
during the rule of his brother. He made offers of a de-

* In the famous song to Hermione and Antiopeia, the person killed is
called Piscistruc.

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grading nature to Harmodius, a young Athenian, and meeting with a repulse, insulted his sister by refusing her advancement to a portion of the Athenian democracy. Harmodius presented the double indignity, and formed a plan with his friend Aristogeiton and some few others to relieve themselves from so hateful a tyranny. Hipparchus was their first object, but finding him protected, they attacked Hipparchus with the violence of insulted men, and slew him at the cost of their own lives. The other conspirators were detected. Hipparchus exchanged popular manners for suspicionful cruelty, and at the same time took measures for ingratiating himself with Darius, king of Persia. In the fourth year of his rule he was expelled, with Spartan aid, by the fugitive Alemeonides, and retired to Sigeum on the Hellespont, thence to Lamassacus, and lastly to the court of Hippias, where, old and disgusting, he was a protection of the enemies of Greece, and to witness their overthrow at Marathon nineteen years afterwards. [Marathon] Herodotus relates that the Spartans repented of having expelled him, but that the plan of restoring him were opposed by the Corinthians, and fell to the ground. (Herodotus, v. 91-96; Thucydides, vi. 54-59.)

PISISTRATUS (Heriodcris), son of Hippocrates, lived at the same time with Cressus, king of Lydia, and ruled over Athens, which was divided into several leagues, and a small number of tyrants. He was the friend and relation of Solon, and, during the lawgiver's absence, bad form and led one of the three parties into which Athens was then split, namely, that of the Eupatrids: Megacles and Lycourgos heading those of the Coast and of the Plain. In the year 560 B.C., Pisistratus, having matured his plan of self-aggrandisement, drove into the market-place, himself and his mules marked with wounds inflicted by his own hand. He attributed these wounds to the enemies of the people, whose friend he was, and asked a guard, to which his brilliant services gave him some claim. Fifty mace-bearers were granted him, with whose help he made himself master of the Acropolis. His triumph however was in the first instance but short-lived. Not long after, as Herodotus tells us, the other two factions joined to drive him out, his rule not being as yet deeply rooted. A new quarrel between Megacles and Lycourgos proved the means of his recall, and he strengthened himself by taking a daughter of Megacles for his second wife. As one of the Alemeonides, she was held to be stricken with a curse, and Pisistratus, as his mother-in-law discovered, slighted her in consequence, so as to leave her a wife only in name. Pisistratus was again expelled, and continued in exile for about thirteen years; indeed he seems to have hesitated whether he should ever attempt to return. The judgment of his son Hipparchus however prevailed, and after many years' preparation, he landed at Athens, took the city by surprise, routed the Spartan host, scattered the fugitives, and was master of Athens. He strengthened himself by foreign and native mercenaries, by gaining the favour of the poor, and taking hostages of the rich, and ruled till his death, a short period of thirty years.

Herodotus observes that Athens, great as she was under the tyrants, waxed yet greater afterwards: a way of expressing that the rule of Pisistratus was a breathing-time, after the reforms of Solon, which gave opportunity for those reforms to sink into the heart of the people, to become not merely enacted but active, and which rendered the next age more brilliant in production than it otherwise would have been. To Pisistratus also were owing the first steps in art taken at Athens, the first important public buildings, the first poor's-rate, under the guise of a tax on the rich to defray the expense of those public buildings, and lastly the first library, and the collection (as it is said) of the poems of Homer.

To Pisistratus too are owing, in one sense, the glory of the Persian war. Had he retired, as Hipparchus afterwards did, to the court of Persia, that war might have been anticipated sixty years earlier, the power of Greece would have been immensely less than it was, and much less corrupt, and thus the issue of the contest might have been reversed. (Herodotus, i. 59, 64; v. 65; vi. 35, 103.)

* The classical reader need not be reminded that the Greek word from which our expression 'attached' is derived, means only united or related to the latter by ties of either blood or interest, and is used in the same sense in Catilina, where Cicero (Catil., 79) expresses the idea "the Roman allies joined in the conspiracy without either disturbing authority or changing institutions, and that he governed the states then established, and ordered it neatly and well; yet Pisistratus was a tyrant."

Mr. Clinton says the time is uncertain; Mr. Thirlwall gives it at five years.

PISCO, C. CALPU'RNIUS. [Cæsar; Cicero.] PISOLITE, or Neo-Stone, a variety of carbonate of lime, which occurs in globules from one-eighth to half an inch in diameter, embedded in a calcareous cement; they usually consist of concentric lamellae, in the midst of which is generally a grain of sand.

PISTACHIA NUT, the fruit of the Pistacia vera of botanists, is the produce of a small tree, or large bush, from 15 to 20 feet high; its leaves are alternate, unequally pinnated, without stipules, and consist of from 3 to 5 oval blunt leathery smooth leaves. The flowers are small and arranged in short branched racemes from the old wood; some are male and others female; the latter are succeeded by dry drupes about the size of an olive, of a reddish colour, with a very thin rind, a brittle two-valved shell, and contain a single almost seedless nut with a green embryo. The tree is originally from Asia Minor, but is now naturalised all over the South of Europe, where the fruit is in request for confectionary and for the dessert.
contemporary cariconiors as a strong and daring, but fierce and quarrelsome ract. Some of the Cancellier of the Buon Ufano, who was the most eminent political leader, named Veri De Cerchi, an influential man among the Florentine Guelphs, the latter contrived to appoint as chief magistrat of Pistoia a friend of his own, called Cantino. This person fanned the flames of faction among the elders or municipal councillors he had them all chosen from among the Bianchi, saying that such was the will of the council of Florence, which however was not true. This measure excited many disturbances, which the elders of Pistoia, supported by the Florentines, feared themselves in of oppress their rivals of the Neri faction, on whom they imposed fines and other penalties. This state of things continued for several years, during which the Pistoias, who were successful in their attempts to contrive to fill their pockets from fines and condemnations. (Dino Compagni, *Cronaca.* These things happened in the latter part of the thirteenth century. But the quarrel between the Neri and the Bianchi spread to Florence, where the two families of Cerchi and Donati disputed for the pre-eminence in the councils of the republic. The Donati assumed the name of Neri, and, with the assistance of Charles of Valois, they succeeded in driving away their antagonists in 1219.

The Florentine Neri afterwards proceeded to attack Pistoia, where the Bianchi were still predominant; but not being able to take it by force, they blockaded the town, which was at length taken by famine, the disease spread among the poor and most of the women and children to be turned outside of the gates. These unfortunate creatures, says Dino Compagni, on coming into the camp of the besiegers, were shamefully used by them in a town, in which the address faction were left among several Florentine. Many of them, after enduring all sorts of abuse, hid their noses, or hands, or feet cut off, and in this mutilated state were carried back to the foot of the town-walls, in order to frighten the besieged, but the magistrates of Pistoia allowed them to be taken in, and thus they died miserably outside. (Dino Compagni, *Cronaca Florentina.*)

Those who are so ready to extol the prosperity of the Italian republics of the middle ages, ought to have considered, as I have done, the scenes as these, in order to form a correct opinion of the state of society in those times.

At last, Pistoia surrendered, on the 10th April, 1306, on the condition that persons and property should be safe; but no sooner had the Florentines entered the town, than they raised the walls to the ground. Pistoia never recovered from that blow. It continued, with some short interruptions, to be subject to Florence, and followed its destiny through the various changes of government.

The remarkable buildings in Pistoia. The cathedral, which was built by the Countess Matilda, in the early part of the twelfth century, and restored by Nicolò di Pisa, contains some good paintings, baso-relievos, and the marble statue of Pistoia, the. This is a jurisprudence, a jurist and an elegant poet; and also that of Cardinal Nicola Fortegueri, a distinguished character of the fifteenth century. The other churches worthy of notice are, S. Pietro Maggiore, L’Annunziata, S. Filippo Neri, Santa Maria dell’Umilità, S. Gio. Battista, S. Domenico, and S. Giovanni Rotondo. The palace del Comune, or degli Anziani, dates from the thirteenth century, and contains several monuments of the middle ages. The episcopal palace, raised in the last century by the Bishop Ricci, is a sumptuous building. The clerical seminary was also built by Ricci. La Sapienza, or the public schools, has a good library. There is also at Pistoia an academy of sciences and belles-lettres. The private palaces of the families Bracciolini, Canaccioli, Rospigliosi, Tolomei, and Fortegueri carry good paintings. (Valéry, *Voyages Littéraires en Italie.*)

Pistoia has produced distinguished men in almost every branch of human knowledge and art; Cino da Pistoia, the poet Fortegueri and Bracciolini, Pope Clement IX., the poet Cortis; the architects Ventura and Vittone; the painters Gerini, Malatesta, and Cipriani (who died in London, in 1790); the sculptors Ennio da Pistoia, Ognaberg, and Cornacchi; the scholars, who are the authors of his ‘Guida di Pistoia,’ 1802; by Zaccaria, ‘Bibliotheca Pistoriensia descrita,’ Turin, 1754; and by Ciampi, ‘Notizie Inediti della Sagrestia Pistoiese dei beli Arredi,’ Pisa, 1804; the historians also published interesting biographies of Cino, ‘Vita e Poesie di Messer Cino da Pistoia,’ 1804; Pisa, 1813.

The history of Pistoia has been written by Fioravanti, ‘Memorie Storiche,’ Lucca, 1758, and also in ‘L’istoria della Repubblica Pistoiese,’ by Giunti, 1758. Viani has written ‘Della Zecca e della Moneta di Pistoia,’ Pisa, 1813.

Dr. Pitsias's chief work was published after his death, under the title of 'Elementary Medicine Physico-Mathematics'; but, like most others of the same class, it contains little that is now considered valuable. He also wrote a work to prove Harvey's claim to the discovery of the circulation of the blood, and several dissertations on the utility of mathematics in the study of medicine.

PITCH. [Tar.]

PITCH, in Music, a tone or degree in musical sounds, whether grave, or acute, or intermediate. It may be the keynote, or it may be a note on which any air or part begins. The pitch of c, the third space in the treble, is a sound produced by 512 vibrations in one second. [Concert-Pitch.]

PITCHSTONE occurs massive. Structure compact, sound hard and with the duke of Leeds who had married the-Sir George invited him to Cleves to be her confessor. He continued in her service twelve years, till her death, when he returned a third time to Lorraine, and was promoted to the deanship of Liverdun, where he died in 1616. The leisure he enjoyed while confessor to the duchess of Cleves enabled him to compile a work which alone has made him known to posterity, "The Lives of the Kings, Bishops, Apostolic Men, and Writers of England." They were comprised in four large volumes; the first containing the lives of the kings, the second of the bishops, the third of the apostolic men, and the fourth of the writers. The three first are preserved in the archives of the collegiate church of Verdun; the fourth only has been published after other works. M'Cullock published after the title of "Joannes Pits Angli, S. Theologae Doctoria, Liverduni in Lotharingia Decani, Relationum Historiarum de Rebus Angliae Tomus Primus," &c.; but the running title by which it is most frequently quoted is "Pits, or Pitches.

In this work Pits took much from Bale's book "De Scripttoribus Majoribus Britanniae" without acknowledgment, pretending at the same time to abhor both Bale and his work. He also quotes Led's 'Concilium de Musica Anglia,' which Wood asserts he never could have had the means of perusing, but must likewise have taken at second hand from Bale. His partiality is great. He leaves his vindications and his polemics to the Irish writers, enticed out of his work, and in their room gives an account of the Roman Catholic writers, such especially as had left the kingdom after the Reformation in Queen Elizabeth's time, and settled at Rome, Douay, Louvain, &c. This however is the best and most valuable part of Pits's work. He published three small treatises, which are less known: 'De Legibus,' Trier, 1592; 'De Beatitudine,' Ingolst., 1595; 'De Peregrinatione,' 12mo, London, 1630, and dedicated by the author to the Bishop of Cleves. (Woods, Athen. Oxon., ed. Bliss, vol. ii., col. 172, 177; Biograph. Brit.; Chalmers's Biogr. Dict., vol. xxiv., p. 532-534.)

PITT, WILLIAM, EARL OF CHATHAM, was the second son of Robert Pitt, Esq., of Boconnec, near Lostwithiel, in Cornwall, by Harriet Villiers, sister of the Earl of Grandison (an Irish peer), and the grandson of Thomas Pitt, governor of Madras, the predecessor of the celebrated Pitt diamond, which, according to an account published by himself, he bought in India for 24,000L, and sold to the French king for 135,000L. William Pitt was born at Boconnec, on the 15th of November, 1708. He was educated at Eton, where he was graduated in 1726 as a gentleman-commoner to Trinity College, Oxford. On leaving the university, he obtained a cbenotory in the Blues, and entered parliament in January, 1735, as one of the representatives for the borough of Old Sarum, which was the property of his family.

He immediately joined the Opposition, of which the head at this time was Frederic Prince of Wales, but for the first session he took no part in the proceedings of the House beyond giving his vote. His maiden speech was on the 29th of April, 1736, on occasion of a motion made by Mr. Pultney, for an address of congratulation to his majesty on the recent marriage of the princes. The motion was seconded by Walpole and Sacheverel, and voted by the house. Pitt's speech was delivered by Tindal as "unmixed with anyinsky sentiments," and it is reported that Lord George Lyttelton (afterwards the first Lord Lyttelton), who held the office of secretary to his royal highness, Pitt's speech is described by Tindal as "unmixed with anyinsky sentiments," and it is reported that Lord George Lyttelton (afterwards the first Lord Lyttelton), who held the office of secretary to his royal highness, was not displeased with the effect of Pitt's speech, but that the few models of antiquity more perfect in that kind, that is to say,

PITS, or PITSEUS, JOHN an English biographer, born at Alton in Hampshire, a.d. 1560. He received his early education at Eton, and when he was eighteen, he was elected a probationer fellow of New College Oxford, but in less than two years he left the kingdom as a voluntary Romish exile, and went to Douay. He went thence to Rheims, and a year afterwards to the English college at Rome. Here he studied Law, and in 1588 returned to hold the professorship of rhetoric and Greek at Rheims. Toward the end of 1590, he was appointed go-

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there was certainly nothing in the matter of this speech, if we may judge from what appears to be a verbal report of it, to put any one in mind of either Demosthenes or Cicero. The animosity between the prince and his father now rose to a great height, and, among the other adherents of the former, Pitt experienced the vengeance of the common resentment indeed that his dismissal from the army took place within a few days after the delivery of his speech. (See the date published for the first time from the Records of the War-Office in an article in the 'Hansard Review,' No. 181, for June, 1840.) In this, however he was recompensed by being appointed by the prince one of the grooms of his bed-chamber. The next occasion on which he is recorded to have taken any part in the debates in the House of Commons was a resolution of the army, on the 3rd of February, 1738; nor did he become a frequent speaker till some years later. He made another speech, of more energy and vehemence than he had yet displayed, in the debate on the 8th of March, 1739, on the convention with Spain; but his name does not again occur in the reports of the debates, either in that or in the following session. He appears to have first taken a prominent part as a debater in the discussion of the successive motions directed against Walpole, in January and February, 1741, towards the close of the seventh and last session of this the first parliament in which he had a seat. It was in one of these debates, professedly on the second reading of the ministerial bill for the encouragement and increase of sea-encampments, that the 17th of January, that Pitt, as is made, in the report drawn upon John for the 'Gentleman's Magazine,' to have delivered his celebrated philippic in reply to the elder Horatio Walpole (the minister’s brother, and Lord Lord Walpole, successively to the office of the exchequer, 1741,” to have delivered a speech on the 17th of January, which the honourable gentleman has with such spirit and decency charged upon me, I shall neither attempt to palliate nor deny, but rest myself with wishing that I may be one of those whose follies may cease with their youth, and not of that number who are ignorant in spite of experience. It is believed however that this brilliant declamation is almost entirely Johnson’s own; the style at any rate is certainly his, not Pitt’s.

To the next parliament, which met in December, 1741, Pitt was again returned for Old Sarum. Walpole resigned in the beginning of February, 1742; but his retirement did not leave the road to office open to Pitt, against whom the king had conceived a violent prejudice, not only on account of the prominent and effective part he had taken in the general assault upon the late administration, but more especially in consequence of certain strong opinions he had expressed upon the subject of Hanover and the claims of the public ministers of the crown. It is understood also that Pulteney, the leader of the new ministry, owing to the dislike which existed between him and Lord Carteret (afterwards Earl Granville), who now became one of the secretaries of state, and Lord Cobham, the friend and relation of Pitt, Lyttelton, and George Grenville, found it impossible or undesirable to bring any one of the three last-mentioned persons into office for the present, although the most distinguished members of his party. Granville’s elder brother Richard (afterwards Earl Temple) and Lyttelton’s father had married sisters of Lord Cobham, and Pitt’s elder brother was married to a sister of Lyttelton’s.

The nominal head of the new ministry was Lord Wilmington, who held the office of first lord of the treasury; but when Walpole, in a few months after his own fall, had contrived to extinguish Pulteney by forcing him into the House of Lords, where, from being the most powerful and popular man in England, he suddenly dropped down into a despised nonentity as earl of Bath, the real supremacy in the cabinet was divided, or rather conceded, for between Carteret and the two Pelhams, the elder of whom, the duke of Newcastle, was the other secretary of state, his brother Henry Pelham being paymaster-general. Wilmington died in July, 1742, and all at once by Walpole’s advice Mr. Pelham was then appointed first lord of the treasury and chancellor of the exchequer. Carteret notwithstanding derived from the favour of the king a power really superior to that of his rival, and upon which his bold and impetuous character more than once brought the dangerous imputation of having overstepped the bounds of the advice with which he was supplied on occasions of public and to his colleagues. In this state of affairs, Pitt soon threw himself again into opposition, and became more active and aminous in his denunciations of the new ministry than he had ever been in inveighing against Walpole himself. On the subject of the king’s Hanoverian partialities in particular, to his sympathy with which Carteret was understood chiefly to owe his influence over the king, and whose behaviour in particular in the council has been more eloquent than ever. He and Lyttelton are also said to have both been members of the secret committee of six, headed by Bubb Dodington (afterwards Lord Melcombe), by which all the operations of the opposition were now directed.

Carteret, now become lord Granville, was dismissed a few days before the opening of the session of parliament in November, 1744; and what was called the broad-bottom cabinet, that is to say the cabinet most distinctly marked by the presence of Lord Granville, was then in appearance, at its head. But although his friends George Grenville and Lyttelton both obtained places in the new arrangement, Pitt’s time was not yet come; his recent conduct in fact had given additional provocation to the king. From this date however he ranged himself among the supporters of administration, and not merely softened his tone touching Hanover and other delicate points, but even did not scruple to unsay and retract a good deal of what had in past years formed the staple of his oratory.

In the beginning of the year 1746 an attempt was made by the duke of Newcastle to overcome the king’s repugnance to the admission of Pitt into office; but the insinuations of Pulteney are said to have been employed to strengthen the king’s resolution to resist all attempts to divide his desperate struggle to escape the threatened infraction. On the 10th of February lord Bath was actually named first lord of the treasury and the head of a new administration, with the support of his kinsman, lord Rochford, and the Lex. But he found this project could not be carried through; and four days afterwards Pelham and all his colleagues were again in the occupation of their several offices. On the 22nd Pitt was appointed one of the joint vice-treasurers for Ireland, and on the 16th he was made a member of the more lucrative office of paymaster-general. After each of these appointments he was re-elected for Old Sarum. To the next parliament however, which met in November, 1747, he was nominated, by the influence of Pitt’s friends, to the office of the search for Salford, one of the Cinque Ports. On this occasion the duke of Newcastle is said to have personally interfered in the election in the most open manner; but when the return was petitioned against on this account, Mr. Pitt, according to the report of the debate, ‘treated the petitioners with great contempt, and turned it into a mere jest,’ and the motion for its being taken into consideration was negatived by a great majority. The opposition in fact was now reduced to a hopeless minority, and the government, which had maintained the authority of the laws, and prevented the ruin of his country. He had thereupon resigned his post in the household of the Prince of Wales, and indeed had separated himself entirely from his royal highness, who still remained the recognised head of the opposition, as it was, till his death in March, 1751. Mr. Pitt distinguished himself in his new place by a strong disdaim of certain sources of emolument of which his predecessors had been accustomed to make use, particularly by the frank and courageous style in which he went on urging and defending the course of national policy, especially in relation to foreign affairs, which the whole of his previous parliamentary life had been spent in opposing and reproving. The change of Pitt was well illustrated by a speech he made in the debate on the address of thanks at the opening of the session in January, 1745, in reference to the abandonment by the government, in the month of December, of the principle of an absolute claim of exemption from search for British ships when found near the coast of Spain—something a claim, which, when in opposition, he had passionately insisted ought to be made an absolute principle of British treaties. ‘If I was then,’ he said, ‘very young and sanguine; I am now ten years older, and have had time to consider things more coolly.’ And he added, referring to a motion which he had formerly supported for an address to the crown against concurring in any peace in which this claim should not be recognised, ‘I am also convinced that all addresses
from this house, during the course of a war, for prescribing terms of peace, are in themselves ridiculous; ... and as the crown has the sole power of making peace or war, every such address must certainly be an encroachment upon the king's prerogatives, which has an air of it being lucky. However wise this language may have been, or however sincere and honest, there is no bitterness of deprecation and scorn which it would not have drawn down from Pitt upon the head of any luckless minister of the government, had it might have been uttered but a very few years before.

The discussions upon the Regency Bill, which in this session followed the death of the Prince of Wales, first brought him into the eye of the country. This event (afterwards the first Lord Holland), which not only made them rivals during their lives, but gave rise to a competition for the chief power in the state in which their two celebrities had for years. For the present the influence of the Pelham section of the cabinet, which Pitt represented, prevailed over that of the Bedford section, which supported Fox; Fox himself, who was secretary at war, kept his place, as well as Pitt; but his patron the duke of Bedford resigned, along with one or two friends also belonging to the cabinet, and whose seats were immediately filled by connections or dependents of the Pelhams. The arrangements now made subsisted till the sudden death of Mr. Fox in the same session, when the duchess of Newcastle was appointed first lord of the treasury and premier. A few weeks after, the parliament was dissolved. This year Pitt drew closer his connection with the Grenvilles by his marriage, with the daughter of the first Lord Grenville, and of his brother, the then viscount Cobham, afterwards earl Temple.

To the new parliament, which met in November, 1754, Pitt was returned for the duke of Newcastle's borough of Aldborough in Yorkshire. Before the end of the session, however a complete breach had taken place between Pitt and his grace; which ended, after about a year, in a reconstruction of the government. On the 15th of November, 1755, Fox was appointed to the post of state, and, two days after, Pitt and his friend Grenville both received intimations that his majesty had no further occasion for their services. But after about another year, Newcastle, already deserted by Fox, found it necessary to resign a position for which the nearly unanimous voice of the public had pronounced him unfit, and his occupation of which had only been signalised by a series of national disasters and disgraces. In this crisis of affairs the king, after a short struggle, found it necessary to appeal to public opinion, and, although the office of first lord of the treasury was given for the present to the duke of Devonshire, Pitt, appointed secretary of state, became the actual premier, with a cabinet composed of men who, in the king's estimation, were the most useful members of his party, in December, 1756. He was now returned both for the town of Buckingham and for Oakhampton, and chose to sit for the latter. But this first ministry of Pitt's lasted only for a few months. The king's old aversion had not been weakened by the manner in which the man of the people had been forced upon his acceptance; and in April of the year following (1757), his majesty abruptly sent Lord Temple his dismissal from the post he held of first lord of the admiralty, to act which was immediately followed, as must have been foreseen and designed, by Mr. Pitt's resignation. For two months and a half the country remained without a government, during which time the interest of the nation was, as it were, in the hands of a crowd of party-men in the country, without being able to prevail upon any individual to undertake the management of affairs. At last, on the 11th of June, Lord Mansfield received full powers from his majesty to open negotiations with Mr. Pitt and the duke of Newcastle; the result of which was that before the end of the month Pitt was again premier, with the seals of secretary of state. Newcastle was re-appointed first lord of the treasury; Pitt's friends, especially the Grenvilles, were given the forces; and even Lord Granville obtained a seat in this comprehensive cabinet of ministers alone. Upon the change in which the duke of Bedford was elected member for Bath, for which he was also returned to the next parliament, which met in November, 1761, and which was the last place he represented.

The detail of the brilliant military successes which distinguished Mr. Pitt's administration belongs to the general history of the country; but an enumeration of the principal results of his conduct of the war may be found in the article on GEORGE III., vol. xi., p. 161. This subject has been brought along with it the ascendency in the cabinet of Lord Bute and his friends [BUTE, EARL OF, and GEORGE III.]; and on the 5th of October, 1761, a few weeks before the meeting of parliament, Bute, on the refusal of his colleagues to accede in his proposition of declaring war against Spain, resigned, along with his friend Earl Temple, the only member of the cabinet who had supported his views. On his retirement however a pension of 3000l. a year was granted to his wife, and his eldest son was conferred on Pitt, and his wife was made a peeress with the title of Baroness Chatham. These honours and rewards did not increase the popularity of the late premier.

In his new position he was considered a sufficiently independent part. Without engaging in any factious opposition, but on the contrary giving a general support to the government, he directed his eloquence against certain of their measures with all his old energy and fervour. In particular he denounced the preliminaries of peace signed in November, 1762; resisted as far as he could, though ineffectually, the famous bill for extending the excise regulations to the manufacture and sale of cider, brought forward by lord North, in secret session of parliament, in maintaining against ministers the illegality of general warrants on the proceedings that arose out of the affair of Wilkes and his North Briton. Before this last question he was again in serious danger of his life; it being whispered that the king had ordered his execution. For a month of Bedford, who, on the failure of the negotiation with Pitt, had been appointed to the office of president of the council.

Another attempt which the king made, in May, 1765, to obtain the assistance of Mr. Pitt in forming a new cabinet, proved equally unsuccessful with the last, and so did a renewal of it in June following. It was while these negotiations were in progress that Burke, not yet himself introduced to the cabinet, was considered for the office of lord chancellor, in which he was to be one of the most brilliant figures, wrote to Flood: 'Nothing but an intractable temper in your friend Pitt can prevent a most admirable and lasting system of government from this time being established. Group pride or patriotism be predominant in his character; for you may be assured he has it now in his power to come into the service of his country, upon any plan of polities he may choose to dictate, and great and honorable terms to himself and every friend he has in his world, and with such a strength of power as will be equal to anything but absolute despotism over king and kingdom. A few days will show whether he will take this part, or continue on his back at Hayes talking fustian.'

The result was the accession of the Rockingham administration, in which Pitt had no place, but whose measures generally had his support, although in the debate on the declaration of war with Spain, 25th April, 1765, he declared himself for the war. He gave them his confidence, adding, while he bowed to the treasury bench, 'Pardon me, gentlemen, confidence is a plant of slow growth in an aged bosom; youth is the season of erudition.' It was upon this occasion that he announced his peculiar view of the constitution, and of the powers of the crown, which had begun with America. 'It is my opinion,' he said, 'that this kingdom has no right to levy a tax upon the colonies. At the same time I assert the authority of this crown to be supreme over the colonies to be considered in every circumstance of government and legislation whatsoever. Taxation is no part of the governing or legislative power. The taxes are a voluntary gift and grant of the Commons and the Commons. In legislation the three estates of the realm are alike consulted, and the consent of the commons and the crown to a tax is only necessary to close with the form of a law. The gift and grant is of the Commons alone. To this singular and not very intelligible theory Pitt clung
the end of his days, dying, indeed, it may be said, in the utterance and vindication of it.

Meanwhile in the difficulties to which this ministry also soon found itself reduced, another application was made to Pitt, so early as the end of February, 1766. At that time it came to nothing, but the attempt was renewed after a few months; and in the end Pitt received a carte blanche to frame a measure which was not introduced till the beginning of August. And a very extraordinary piece of handy-work it turned out. He made an administration, as Burke has said in a famous passage, 'so chequered and speckled; he put together a piece of journy so crookedly indented and whimsically dovetailed; a cabinet so variously inlaid; such a piece of diversified mosaic; such a tessellated pavement without cement; here a bit of black stone, and there a bit of white; patriots and courtiers, king's friends and republican, of every cause, of every faction, of every party, that it was indeed a very curious show, but utterly unsafe to touch and unsure to stand on.'

What most astonished the public in the whole arrangement was the manner in which Pitt dispensed of himself: he appropriated the almost sinnercure and sanguine place of lord privy seal, and, leaving the old scene of his glory, went to the Upper House as Viscount Pitt and Earl of Chatham. 'The joke here is,' wrote Lord Chesterfield to a friend on the occasion, 'that he has had a full stipend in opposition for this occasion; the other day he was spoken to and was told to put his hand on his legs again. Everybody is puzzled how to account for this step; though it would not be the first time that great abilities have been dulled by low cunning, but it will, he hopes, be able to stand upon his legs again. Everybody is puzzled how to account for this step; though it would not be the first time that great abilities have been dulled by low cunning, but it will, he hopes, be able to stand upon his legs again.'

We cannot enter into the history of the rickety administration thus attempted to be set up, but it is to say that it was in a state of confusion and embarrassment all the time it subsisted, and that Lord Chatham, its nominal head, was soon withdrawn from all share in the conduct of affairs by a serious illness, which, from the evidence furnished by his letters and by correspondence with his intimate friends, has been chiefly mental, and to have taken the form of a deep hypochondria, making him shrink with horror from business and from intercourse with any person beyond the circle of his own family. At the battle of Culloden, on the 15th of October, 1746, he sent his friend Lord Camden to the king with a resignation of his office.

This decision, and the relief from responsibility which it brought with it, probably had a beneficial effect on his health. In the session of parliament which began on the 9th of January, 1770, he again appeared in the place, and took as prominent and active a part in debate as he had ever done in his past days. One of the chief questions on which he took part in this session was the conduct of the House of Commons in the affair of Wilkes's election for Middlesex, which he condemned vehemently and without reserve, and contended to be a flagrant outrage on the first principles of the constitution. He also appeared in the session which began 21st January, 1772; in one speech in particular, which he delivered in May that year, in support of a bill for the relief of Protestant Dissenters, he showed, according to the report of the debate, 'as much oratory and fire as perhaps he ever did in his life.' But his name does not appear again in the debates till towards the end of the session of 1774, on the 27th of May in which year, though still labouring under a state of ill-health, which had long kept him absent from the House, he spoke warmly and impressively in opposition to one of Lord North's bills for subduing the resistance in America. He spoke also several times in the same now all-engrossing subject, in the earlier part of the first session of the next parliament, which met in November of this year; but then a return of ill-health sent him back for nearly two years into retirement. When he again made his appearance in the House, in the end of May, 1777, it was to reprove the minister for his feeble and exhausted manner of conducting the most important interests of the nation, and to support the motion to drop a bill for the regulation of the colonies in America; and he continued to come down for the same purpose during the next session as often as the little strength remaining in his raked and shattered frame would allow it. At the beginning of August, 1778, after he had spoken once on a motion for an address to the king on the state of the nation, he attempted to rise again to notice something that had been said by the duke of Richmond in reply, when he dropped senseless into the arms of those beside him. He was carried home to his house at Hayes, in Kent, but never again rose from his bed, and died on Monday, the 11th of May, in the seventieth year of his age.

All the enthusiasm which had been expressed in former years was now revived by his last moment of death, in circumstances so affecting, of the orator and statesman, who for more than forty years had filled so large a space in the public eye, and whose memory was associated with the history of the nation. It was a public duty to the nation to say farewell to the publick functionary, to the eminent jurist, to the man of letters, to the friend of science, to the patron of literature, and to the benefactor of mankind. What has been said of the great patriotic poet, a friend of his, addressed to a funeral and a monument in Westminster Abbey at the public expense, were added the more substantial rewards of a grant of twenty thousand pounds for the payment of his debts, and a pension of 4000l. a year to his descendants.

As to Lord Chatham's real claims, either as an orator, a minister, or a patriot, we may observe in general that in each of these capacities he appears to have been at best the most extraordinary man, and that his most signal and immediate effects of which there can be no question, must have partaken very much of the half-intellectual art of acting, and been indebted for its power to his voice, his eye, and other more external advantages, as much as to any higher qualities. At least no report that has come down to us of any of his speeches conveys an impression at all answering to their traditio"
similiar composition, formed by the Shelburne whigs and the Tories who, seceding from North, professed themselves the
favourite he was, and who early formed high anticipations of
the figure he would make in life. He was sent in 1773
to Pembroke Hall, Cambridge, where his studies were
principally under the direction of Dr. Freyman (who afterwards
took his place as a government bishop of Lincoln-
ceter, and the biographer of his distinguished pupil). Al-
though he was little more than fourteen years of age when
he went to reside at the university, says Bishop Tomline,
'and he displayed himself by frequent instances of
health, the knowledge which he then possessed was very
considerable; and, in particular, his proficiency in the
learned languages was probably greater than ever was
attended on the mixture of House of Commons
authors he seldom met with difficulty; and it was an un-
common thing for him to read into English six or seven
pages of Thucydides, which he had not previously seen,
without more than two or three mistakes, and sometimes
without even one.' Mr. Pitt was very properly taught
when he came up to the university; but this way of stating
the matter only shows that the bishop's own scholarship was
small.

The state of events after leaving Cambridge, Mr. Pitt visited France, and
studied for a short time at Rheims. On his return to En-
land, being intended for the profession of the law, he entered
himself of Lincoln's Inn; and he was called to the bar in
1775. After a little time he took up his chambers and
perhaps twice, he was returned to parliament for the borough of
Appleby, the patron of which was then Sir James Lowther
(afterwards earl of Lonsdale); and from this date his original
profession was given up for the House of Commons and a
political career.

He took his seat on the 23rd of January, 1781, and his
first appearance in debate was on the 26th of February fol-
lowing, on the motion for the second reading of Mr. Burke's
famous bill for the regulation of the civil list establishments.
He gave his hearty support to the measure, 'and,' says the
report, 'in a speech directly in answer to matter that had
fallen out in the course of the debate, displayed great and
astonishing powers of eloquence. His voice is rich and
striking, full of melody and force; his manner easy and
elegant; his language beautiful and luxuriant. He gave in
this first essay a specimen of eloquence not unworthy the
son of his immortal father.' He afterwards spoke repeatedly
on the side of the opposition in the course of this and the
following session, before the termination of which it may be
said that he had taken his place with Burke, Fox, and
Sheridan (the last also a member of only the same stand-
ing with himself), in the front rank of the debaters of the
day.

It was on the 7th of May, 1782, a few weeks after the fall
of the North and the appointment of the second Rocking-
ham ministry to the public offices, that Pitt took the lead in
the reform of the representation of the people. The motion
was defeated by an inconsiderable majority; but the mover
continued for some years after this to advocate, if not to hold,
the principles or opinions which he announced on this occa-
sion. At this date indeed he was so zealous a friend of
reform as to take a leading part in some proceedings out
of doors for the promotion of that object.

The death of the Marquis of Rockingham in the begin-
ning of July having dissolved the administration of which
he was the head, and that of Lord Shelburne having suc-
ceded, Mr. Pitt was appointed to office and to a seat in the
cabinet, as chancellor of the exchequer, having just entered
his twenty-fourth year. This was the administration to
which it was left to finish the contest that had arisen out
of the attempt to tax the Americans, by acknowledging the
independence of the United States, and concluding peace
with France and Spain. It was assailed upon these and
various other grounds formed between the adherents of the two immediately preceding mi-
isters, as respectively represented by Lord North and Mr.
Fox; and the issue was, that in March, 1773, Lord Shel-
burne and his colleagues were driven from office by the
united force of this new opposition, and a cabinet was
formed, nominally under the premiership of the Duke of
Portland, but in which the chief power was actually lodged in
the hands of Lord Shelburne, a statesman of the Roman
school of state. The alliance of whigs and Tories however, which	had carried this victory, was now opposed by another body of
P. C. No. 1127.
found the country involved on his first accession to power; but it has been generally thought unfortunate for his son's political reputation that he should have been transformed from a peace into a war minister. In point of fact, the nation certainly continued to make a very steady economic progress, but it was in large part due to the energy of his administration, and the military results of the last eight were on the whole decidedly disastrous. During the former period the trade of the kingdom was estimated to have increased by very much to this one; and in right of the plate, in 1786, the revenue had received an augmentation of 5,000,000l., of which not more than 1,500,000l. was calculated to have arisen from new taxes. At the same time the expenditure was not greater in 1790 than it had been in 1767, after all the expenses of the war had been fully paid. The establishment of a new constitution for the East India Company (1784), the establishment of a new sinking fund (1786) [National Debt, xvi., p. 100], the arrangement of a commercial treaty with France on very liberal principles (1786), acts passed for the relief of the Roman Catholics in England, Scotland, and Ireland (1791, 1792), besides various minor measures for the suppression of smuggling, were the administrative innovations that chiefly distinguished the period, and that were understood to owe their origin mainly to the premier. In 1785 Mr. Pitt also once more brought forward the subject of the amendment of the representation of the people; but by this time his authority as minister to ensure the success of his motion, which was negatived by a considerable majority, and which he never renewed. Afterwards, when the question of the amendment was brought up by the Pitts, he made a new appeal to the People, and brought forward at their instance by Mr. (now Lord) Grey, the proposal found in Mr. Pitt one of its most determined opponents. To the exertions that were now begun to be made for the abolition of the slave trade, he lent the aid of his eloquence and of his own vote; but upon this question also he declined to use his power or influence as the head of the government. He took much the same course in regard to the prosecution of Warren Hastings, and in regard of the administrative measures of the period. All the measures, it may be observed, to which Pitt gave only this kind of support, failed of success during his administration.

One of the most remarkable of the contests and victories that illustrate this first period of his government, occurred in the session of 1788-9, when he successfully maintained against Mr. Fox the right of parliament to supply the temporary defect of the royal authority occasioned by the incapacity of the crown. This right had now received as an established doctrine of the constitution.

Almost the only memorable legislative measure of the latter years of Mr. Pitt's first ministry was the union with Ireland, which he obtained in 1782. It will be remembered that the disappointment of the expectations which he considered himself entitled to entertain of the abolition, or at least very great mitigation, of the penal and disabling laws affecting the Roman Catholics, was the reason which he assigned to the king for retiring from office soon after the passing of this measure. He and his friends resigned in March, 1801.

For some time Mr. Pitt gave his support to the administration of his successor Mr. Addington; but when the rapidly growing conviction of the incompetency of the cabinet began to feel its speedy downfall, he joined in the general cry against it, and the result was that in May, 1804, he became again prime minister. He remained at the head of the administration until the 23rd of January, 1806, the consequence partly of a wasted constitution, partly, it is generally believed, of a broken heart. The overthrow of the new coalition which he had succeeded in forming against France by the series of successes achieved by that power in the latter part of the year 1805, is supposed to have combined with the vexation arising from the impeachment of his friend Lord Melville to destroy him. He had for some years been accustomed to stomach his own failures, and he did not care indulging the air in wine; and this habit also no doubt had its share in shortening his days. The public bearing of Mr. Pitt was cold and lofty; but he was not unattractively reserved or unapproachable among his intimate friends, and the few who really knew him well seemed to have been strongly attached to him. Whatever were his faults, there was no meaness in his character. As to the merits of his general system of administration, opinion is still nearly as much divided as ever. With regard to the character of his oratory there is perhaps beginning to be a more general agreement; and we may venture to say, without incurring the chance of any very loud or extended dissent, that he has never shewn any accidental or momentary touch of his father's eloquence; and of either splendour of imagination or any remarkable depth or force of thought, it must be admitted to have been nearly destitute. Its highest quality appears to have been a power of sarcasm, which was displayed in the presence of the king, and which was both proud, and contemptuous, and having little sympathy either with the ordinary vices and weaknesses, or with the better feelings and enjoyments, of his fellow-men.

PITTA, M. Vieillot's name for a genus of remarkable birds, placed by Mr. Swainson among the Myiotrichinae, or Ant-Thrushes. [Merulide, vol. xvi., p. 122, where the generic character of the genus and that of the subgenus Chlorosoma and Gratallaria are given.]

Pitta. (Vieill., Temm.)

M.Lesson remarks that, under the name of Myiotricha, Illiger and Cuvier united the Brises of Buffon and the sitr-thrushes of the English. Mr. Swainson observes, he is aware, that the finches, which he observes, for the vivid colours of their plumage, their long legs, and their very short tail. They are only found, he adds, in the Malayan Islands, whilst the Ant-thrushes are found in the countries belonging to the region of the Indo-Australian Archipelago. Mr. Swainson notices the genus Pitta as one of remarkable beauty, and observes that they have the gradually-curved bill of the true thrushes, but much stronger. 'The predominant colour of their plumage,' continues Mr. Swainson, 'is green, the sides of the head and wings being generally variegated with vivid blue; some species have a hood of black, and all are confined to New Holland and the neighbouring islands of the Indian Seas. America indeed presents certain animals bearing a resemblance to these genera, in the subgenus Gratallaria, Vieill., and Chamaeza, Vig.; but the species are very few, and they are coloured in the homely hues of ordinary thrushes. To this group, as a subgenus, we refer Chlorosoma, called by some writers by the barbarous and unmeaning name of Pitta, from the name of the genus.'

The genus Myolthera, on the other hand, is chiefly restricted to tropical America, and comprises numerous species, all of which are, according to Illiger, enrolled in dark colours, but generally variegated with white. Although slightly separated from the Oriental group by their abruptly-hooked and strongly-toothed bill, they are yet so intimately allied to the small bush-shrikes (Thamnophilites) that it is almost impossible to draw a distinction between them.

Of all the tribes of insects which swarm in the tropics the ants are the most numerous; they are the universal devastators, and in the dry and overgrown forests of the interior the traveller can sometimes proceed five miles without treading upon their nests. To keep these myriads within due limits, a wise Providence has called into existence the ant-thrushes, and has given to them this particular food. These birds are more abundant on account of their geographical range, for, beyond the two antithetical limit of the tropics, we have pale, and their enemies, the Myolthera, totally disappear. As a general distinction by which this family may be known from the bush-shrikes, we may mention the difference in their habits. The structure of the foot is mainly adapted for walking and of the other is more suited for perching. The ant-thrushes are very locally distributed; for, although the group is tropical, we frequently found that a particular species, which usually inhabited a forest, was replaced in another by a second; while a third local species would present us with still another kind, different from those we had previously found. Cayenne and Surinam, in the same manner, furnish us with many species totally unknown in the former part of Brazil.'

To return to Pitta. We select, as an example, Pitta gigas, Brises Geoffr., or Gaint Pitta.
PI T 195

Description.—Size equal to that of a magpie, but the tail is short and squared, and the wings cover it entirely. A very brilliant azure blue covers the back, the scapulars, the rump, and tail; a less vivid tint is spread over the wings, the quills of which are black, coloured, with azure towards the tips; summit of the head, nape and demi-collar of the lower part of the neck black; feathers of the front and eyebrows ashy-brown; throat white; an ashy-brown tint is spread over all the lower parts; the feet are very long and of a horny ash-colour. Total length nine inches.

Locality.—Sumatra. (Temm.)

Of the bill, passes backwards so as to include the eye, and surrounds the occiput; tail deep tarnished green, wings reddish, but the three or four secondary feathers nearest the body are opaline bluish ash; iris, bill, and feet very bright vermilion red. Total length eleven inches two or three lines.

The male and female have nearly the same livery.

The young of the year differ in the colour of their bill and feet, which are black; in that of the wings, which is a tarnished rusty red, and in the very clear blue, which is nearly whitish, of all the rest of the plumage. This blue tint is more vivid in middle age, and passes by degrees from bright azure blue to celadon-green. Individuals during moult have the plumage varied with these two tints very vivid and pure.

Localities.—Java and Sumatra. (Temm.)

Grallaria. (Vieill.)

Pitis Gigas.

Chlorisoma. (Sw.)

Example, Chlorisoma thalassinum (Kitta thalassinum, Frxoll Thalassin, Temm.).

PITTACUS, one of the so-called seven wise men of Greece, was the son of Hyrradius, and born at Mitylene in the island of Lesbos, about the year 652 B.C. Nothing is known of his education and the early part of his life, and the first facts which his biographer, Diogenes Laertius, mentions are, that, with the assistance of the brothers of Alemus, he delivered his native island from the tyranny of Melanchnus (B.C. 612), and that when the Mityleneans were involved in a war with the Athenians about the pos—

Chlorisoma thalassinum.

Description.—Greater part of the plumage very brilliant celadon-green; a velvety black band springs at the angle
session of the town of Sigeum on the Hellespont, Pittacus gained the victory over the Athenian general Phrynus by a singular stratagem. He came into the field armed with a casting-net, a trident, and a dagger, and first entangled and then swept his adversary (s.c. 606). In this war Alcaeus left his shield a trophy to the enemy. It must have been after this war that Mytylene was distracted by the two political parties which about this time began to appear in various parts of Greece. The aristocratic party, to which Alcaeus and his brother Antimenes belonged, was driven from the town, and the popular party unanimously elected Pittacus to the office of symmeyes to defend the constitution. During his administration, which lasted from 490 to 480 B.c., he overcame his adversaries, and gained them by his clemency and moderation. Even Alcaeus, who had assailed him in his poems with the greatest bitterness, became reconciled. Pittacus regulated the affairs of his country by the most salutary laws and institutions, and in B.C. 586 he voluntarily resigned his office and withdrew from public life. Valerius Maximus (vi. 5, ext. i.) erroneously states that Pittacus was made symmeyes at the time of the war with the Athenians for the purpose of conducting it; but this is sufficiently refuted by the authority of Strabo, the fragments of Alcaeus, and Diogenes Laertius. Pittacus passed the last ten years of his life in quiet retirement, enjoying the esteem and love of the best and wisest of his countrymen; and when the Mitylenians wished to reward him for his services with an extensive tract of territory, he refused to accept it for himself, but had it made consecrated ground, which to the time of Diogenes Laertius retained the name of the grounds of Pittacus. He died in B.C. 570, at the age of 80.

He was the author of a considerable number of elegies, of which a few fragments are still extant. Diogenes Laertius has preserved a short letter ascribed to Pittacus, and addressed to Cyrus, king of Lydia, which contains an answer to an invitation of the king to come to see his magnificent treasures. Many of the numerous maxims of practical wisdom current among the antiicts were ascribed to Pittacus, and are preserved in the works of Diogenes Laertius, Pliutarch, Aelian, and others.

PITTOSPORACEAE are polypetalous exogenous plants with a definite number of hypogynous stamens, a superior one or two-celled ovary, which in the former case has parietal placentae, numerous ovules, a single style, and hard seeds containing a very small embryo in the region of the hilum. Their position in a natural arrangement is unsettled, but appears to be near the Vitaceae order, rather than the Rhamnaceae or Pittaceae. All the species contain in greater or less abundance a resinous substance, the use of which is unknown. Many of the species are very shrubs or bushes, sometimes extremely graceful, but they are of no known use. Most of them are natives of Australia. The names of Solly and Billardiera recall to the mind some of the prettiest twiners of the greenhouse.

PITTS, WILLIAM. The very recent death of this highly-gifted artist presents us attempting a biography, by which we mean only a few loose scraps, yet not entirely pass over the name of one who will henceforth be known as one of the greatest among British artists, we content ourselves with giving a brief record of him.

He was born in London, in the year 1790, and brought up by his father in his own business, which, at that of a chaser, or what would have been termed in Italy an orfice, a branch of art now regarded as little better than a mechanical one, and accordingly turned over almost entirely to art, it was in which Cellini displayed his mastery and earned his reputation. Whether Pitts subsequently studied under any sculptor we do not know. His very early marriage, at about the age of nineteen, would seem to indicate that he was then following his profession on his own account. It is likely that for what instruction in sculpture he ever had, he was chiefly indebted to Flaxman, for he was employed by him in chiseling the shield of Achilles, designed and modelled by himself. Indeed there seems to have been great similarity of feeling and taste between Pitts and Flaxman, for both displayed their talents in poetical subjects and extensive compositions consisting of a number of figures. As a counterpart to the shield of Achilles, Pitts modelled two pieces, the crowning of the Achæans by the other; also the shield of Heracles, from Hesiod, and the Brunswick shield, which is a large circular relief, representing George IV. in a car in the centre, and in the other compartments the principal events of the life of Pitts was also employed on the Wellington shield, which was executed under the immediate inspection of Stothard.

By way of parallel to Flaxman's two series of designs from Homer and Dante, may be mentioned a similar composition by Pitts from Virgil and Ossian, only the first of which has been engraved, being etched by himself in 1831; as yet they are hardly known to the public, whereas the designs of Flaxman are known throughout Europe.

Both, however, might be described fancy which were executed and for their masterly graces of execution, some of his smaller subjects in relief have obtained for Pitts with many the title of the 'British Cellini.' Yet, except as indicative of congenial fancy and artistic power, such appellation is utterly inappropriate, hardly any two individuals being so utterly dissimilar in personal character as the arrogant and daring Benvenuto and the meek and unassuming William Pitts, who was so enthusiastic devoted to his own art, and utterly unskilled in the artless way to popularity and fortune. Hence it is matter of regret rather than surprise that he should not have obtained patronage at all in proportion to his ability and his genius; or that he ever so many disappointments, and was last involved in embarrassments. How far these last had any share in impelling him to the fatal act by which he terminated his life, it is difficult to judge. He destroyed himself by poison, April 16, 1840.

The following is a list of his chief productions, arranged according to their dates:—The Deluge, 1823; Samson slaying the Lion; the Creation of Eve; Herod's Cruelty, 1824; a Charriot-race, 1826; the Penates; Shield of Aeneas, 1829; the Rape of Proserpine, and the Nymphs, 1831; bas-reliefs, about eight feet long, executed for Mr. Simmons, of the Regent's Park, 1829; the Brunswick Shield, 1830; the Apotheosis of Spenser, Shakspere, and Milton; and another of the triumphs in two of the windows of the Buckingham Palace, 1831; the Shield of Hercules, 1834; a long bas-relief or frieze of all the English sovereigns from the Conquest, 1837; a design for a masonic trophy, 1839; the Triumph of Ceres, and a small subject modelled in wax, exhibited at the Royal Academy, 1839.

Whatever difference of opinion may exist with regard to Pitts' talents, there can only be one opinion as to his enthusiastic devotion to his profession, when it is known upon what high grounds he stood, and how he sometimes had no means for a fortnight together, snatching during all that while only short intervals for bodily rest. He used to observe that even a day of eminence as a sculptor would not be too early published. His own life of anxious toil.

In addition to the works above enumerated, may be mentioned two of his latest performances, the 'Kemble Tribute,' presented to C. Kemble, Esq., and a vase, executed for her.
majesty, as a sponoral present by her, of exquisite design as to its general form, and poetically embellished with groups in the signifying Birth, Infancy, Instruction, Education, and Love.

PITTSBURG. [Pennsylvania]

PITYIUS. [TANARIGINE.]

As Name, a species of nail, is a disease of the skin in which irregular patches of the cuticle appear covered with thin nail-like scales or with particles of a fine white powder, which, as fast as they fall off, are succeeded by others. It may be regarded as a mild form of the disease of dogs in which the hair is constantly going on, and by which the old cuticle is removed from the surface of the body to be replaced by that of more recent formation. [NITRITION.

The commonest form of this disease is that called Pityriasis capitis, or Pityriasis of the scalp, in which hair is chiefly situated on the front of the chest and abdomen, and are commonly called liver-spots or tan-spots. The extent and form which such spots present are infinitely various; but though they multiply, they do not increase or decrease, and they rarely produce any inconvenience beyond a slight itching. The P. Rubra is an aggravated form of the preceding; the spots are more or less bright red, and are the seats of considerable irritation. In the P. nigra the essential part of the disease, which is of very rare occurrence, is the production of a cuticle of nearly a black colour. It may be doubted whether it deserves to be regarded as a variety of Pityriasis, or whether the generally lumped-occurred are not merely examples of the production in Europeans of cuticle similar to that which belongs naturally to negroes and other coloured nations, and of which the formation has been observed as often on apparently healthy as on diseased skin.

PITYUS. [BALEARIC ISLANDS.]

PIUS I., a native of Aquileia, succeeded Hyginus as bishop of Rome, A.D. 142. Little is known of him. Several decretals have been attributed to him by Gratian, but they are not entirely authentic; and Pius died in the year 157, and was succeeded by Anicetus.

PIUS II. [Borgia, Victor Pius]. In 1450, at Consignano in the state of Siena, succeeded Calixtus III. in 1452, but was superseded in 1455 by Sigismond. He distinguished himself in the Council of Basle, A.D. 1431-39—

that celebrated assembly which attempted earnestly, though with little success, the reformation of the Church, and in which Piccolomini acted as secretary, and of which he wrote a history. 'Commentarius de Gestis Basili. Concilii', in two books, a very important work for the history of the Church. At that time Piccolomini was a strong advocate for the supremacy of the Council and its right to judge and excommunicate the pope, 'who,' he argued, 'ought to be considered as the vicar of the Church rather than as the vicar of Christ.' These tenets however were condemned by Eugenius IV., but the Council asserted its authority to decide of them, and of the same year, he then began a long struggle, which terminated in an open schism, the Council deposing Eugenius and electing Felix V. [AMADEUS VIII.]

Piccolomini was appointed secretary of the new pope or antipope, and was sent with his ambassador to the enemy, Frederic III., who was so pleased with him, that he prevailed upon him to give up his pecuniarious situation and accept the place of imperial secretary. Frederic afterwards sent him on several missions to this end loaded with favours. Piccolomini was not ungrateful; he wrote several works in praise of his patron and in support of his imperial prerogative—De Origine et Auctoritate Romani Imperii ad Fridericum III. Imperatorum, and against the claims of several houses to the imperial dignity, De Friderico, Nuptiis, et Coronatione Friderici III. Commentariolus; 'De his, qui Frederici III. Imperante, in Germaniam, et per totam Europam memorabiliter gestasunt, urque ad annum 1458, Commentarius.' At last Frederic sent Piccolomini as his ambassador to Pope Eugenius IV. This was a delicate mission to the avowed antagonists of that pontiff; but he managed so well by his dexterity, his captivating address, and, above all, his eloquence, that the pope not only forgave him, but befriended him, and nearly succeeded in delivering him from the embassy, and sending him back to Germany from his mission, when he received a papal brief appointing him apostolic secretary. He accepted an office congenial to his clerical profession, and also as the means of support; but he still retained a lively sense of gratitude towards his benefactor. From that time a marked change took place in the opinions, or at least in the professions, of Piccolomini, and he became a stout advocate for the claims of the see of Rome. Mean- time Eugenius was driven out of Rome, and his successor, Felix V., was recognized by the Fathers of the Council of Basle, who, being forsaken by both the emperor and the French king, made peace with Rome. Felix V. also having abdicated in favour of Nicholas, the schism of the Church was healed. Nicholas made Piccolomini bishop of Trieste, and afterwards of Siena, and sent him as nuncio to Germany and Bohemia, where he had several conferences with the Hussites, which he relates in his 'De Rerum Memorabiliter.' He had however the merit (rare in that age) of recommending mild and conciliatory measures as the most likely to reclaim dissenters to the bosom of the Church. He wrote a work on the history of Bohemia and the Hussites, in which he describes the lives of several of the tenets of that sect, as well as those of the Valdenses, which he calls 'impious,' but which are mainly the same that have since been acknowledged by the Protestant Reformers. He also wrote 'De laudibus et laetitiae in Christiani Martyris,' and the burning of John Huss and Jerome of Prague, and speaks of their fortitude, 'which,' he says, 'exceeded that of any of the philosophers of antiquity,' and he recapitulates literally the charges against them, and the corruption of the clergy.

(Benev Sylvius Historia Bohemica.)

In the year 1552, Piccolomini, being then in Italy, was present at the solemn coronation of Frederic III. at Rome, and delivered a speech in the pope in the name of that sovereign, whom he afterwards accompanied to Basle. On their return to Rome, he delivered another oration before the pope, the emperor, and other German and Italian princes, and the ambassadors of other European courts, for the purpose of exhorting them to form an effectual league against the Turks, who were then on the point of taking Constantinople. Piccolomini felt the great danger to Christian Europe from the rapid advance of the Ottoman conquerors, and he considered the object of his whole life was to form a strong bulwark to protect Italy and Germany; but at the same time he was too well acquainted with the political views of the various Christian courts, and their selfish and petty views, to expect much support in their councils, and he expresses his views and his doubts in a masterly manner in several of his Epistles.

Calixtus III., the successor of Nicholas V., made Piccolo- mini a cardinal, and in 1458, after the death of Calixtus III., he was unanimously elected pope by the name of Pius II. His pontificate lasted only six years, but during this period he distinguished himself by promoting learning, by inculcating peace and concord among the Christian princes, and exhorting them to unite their efforts against their common enemy, the barbarous Turks. Machiaveli, a writer not very favourable to the court of Rome, says that 'Pius showed himself model of all the welfare of Christendom and of the order of the Church, and of any private passion or interest of his own.' (Storte Florentine. b. vi.) The year after his election he convened a congress of the ambassadors of all the Christian sovereigns to arrange the peace of Italy, and the pope himself repaired to Mantua, accompanied by the learned Philophilus, who spoke eloquently in favour of the proposed league. Most of the Italian states were willing to join in it, but Germany and France stood aloof, and nothing was done. But when Fadul, king of Naples, in his war against the duke of Anjou, the pretender to that crown. At the same time he was obliged to make war in his own states against Sigmimund Maiaesta, lord of Berg, and against Savelli and the rest of the feudal lords, and he was successful. By a bull addressed to the universities of Paris and of Cologne, Pius condemned his own writings in defence of the Council of Basle, concluding
with these words: 'Believe what I, an old man, now say to you, and not what I wrote when I was young; believe the things people tell you, and not what they write. Reject Anæs Sylvius, and accept Pius II.' (Bulla Retractionum omnium Dudum per eum in Minoribus adhuc agentes pro Consilio Basileiensi et contra Eugenium summum Pontificem Scripturam promulgatam.) To utter such letters to his friends also, and especially to Pietro di Noceto, he expresses sorrow for his juvenile weaknesses, for he had once been too fond of the fair sex, and had even written accounts of some of his amorous adventures, and those of other persons, which are found among his Epistles.

A vacancy having occurred in the archiepiscopal see of Mainz, two candidates appeared for it, Adolph, count of Nassau, and Dietrich of Lemberg. The papal bulls of the two candidates were described to the candidates, who by the concert had the right of deciding in cases of contested elections, refused to confirm the choice of Dietrich unless he engaged to assert the supremacy of a general council, not to convocate of his own authority an imperial diet, and further to pay to Rome double the sum fixed for the annates, or first fruits. Dietrich demurred to the first two conditions, and positively refused to accede to the last, and as proceedings were instituted against him in the apostolic court, he appealed to the next general council. Pius declared such appeals to be heretical, and excommunicated and deposed him, appointing Adolph of Nassau in his place. The emperor acknowledged Adolph, but Dietrich being supported by the Count Palatine and the estates of Bavaria, the latter munificently endowed, chief, ended in the submission of Dietrich. Those who remembered the sentiments of Piccolomini when imperial secretary, and especially his letter (Epistola 25) to the Papal minister in Hungary, extolling the virtues of Dietrich, were inclined to think that change of station had, in him as well as in most men, produced a corresponding change of opinions. Pius took also the pains to write a long letter to Sultan Mahomet II. to convince him of the ills of Islamism, and to induce him to turn Christian.

In the year 1464 an armament intended against the Turks was directed to assemble at Ancona, and soldiers began to repair thither from various parts. Matthias, king of Hungary, and Charles d'Anjou, the brother of the king, had promised to be of the expedition. The Venetians also had promised the use of their fleet to forward the troops across the Adriatic into Albania. Pius II. set off from Rome for Ancona, but on arriving there he found that the soldiers were in want of arms, clothes, and provisions; the foreign princes did not come; and instead of the Venetian fleet, only a few galleys made their appearance. The aged and disappointed pontiff, on the 14th of May, 1464, expired, not having taken leave of his cardinals and begged forgiveness if he had erred in the government of the church. He was generally regretted, especially throughout Italy. He was succeeded by Paul II. His life, but little, was left to him. He ascended the rank of a bishop's see, and gave it the name of Fienza, by which it is now known.

As a learned man and a writer he is best known under the name of Anæs Sylvius, the most important part of his career being passed before he was elected pope. He was one of the first historians of his age, a geographer, a scholar, a statesman, and a divine. He was also a great traveller by sea and by land; he lived many years in Germany, he repeatedly visited France, visited the great Britian and as far as Scotland, and to Hungary. His biographer, Campanus, bishop of Arezzo, speaks at length of his eruditions, and his diligence in informing himself of everything worth knowing about the works, besides those already mentioned, are: 1. Cosmographia, vel de Mundo Universo Historiarum, liber i. (a second book treat especially of Europe and its contemporary history); 2. In Antonii Panormita de Dictis et Factis Althoni Aragonum Regis, libros quatuor. Commentaria; 3. Epitome supra Decades Flavii Blondi Fertilivensis, ab inclinatione Imperii usque ad tempora Johannis XXIII. Pont. Max., in 10 books; 4. Historia Gothic. published within the year 1392; 5. A Treatise on the Education of Children, with Rules of Grammar and Rhetoric; 6. lastly, his numerous Epistles, which contain much varied information. A collection of his works was published in the Senesiensium Conventus, Giunti, of 1506, under the title Anæi Sylvius Pontificis Pii II. Scriptorum Omnium extant, fol. 1551; but this edition does not include all. Domenico de Rossetti has published a catalogue of all his works and their various editions, and also of his biographers and commentators: 'Gerei Editiones, Opera et Diurna' (Rome, 1833). Biography of Pius II. by Platina and Cano are annexed to the Base edition of his works, but a much more ample biography is found in the Commentaries published at Frankfort, 1614, under the name of Johann Gobellinus, his secretary, but which contain not a few errors. The pope has a long and important dictation: 'Pii II. Pont. Max., Commentarii Rerum Memoria- bilium qua Temporibus suis contigerunt,' lib. xii., with a continuation by his intimate friend James Ammanato, in the expression and point of time; he had, at his desire, assumed the name of Piccolomini.

PIUS III., Cardinal Francesco Todeschini Piccolomini of Siena, descended from a sister of Pius II., was elected pope November 14, 1552, as Paul VI., and died himself in less than a month after his election.

PIUS IV., Giovanni Angelo Medici, or Medicini, of Milan, not of the great Florentine family of Medici, succeed Pius IV. in 1560. He made his nephew Charles Borromeo a cardinal, who afterwards became celebrated as archbishop of Milan. He instituted proceedings against the nephews of the late pope, Cardinal Carlo Caraffa, and his brother the duke of Palma, who were accused of various crimes, which were said to be premeditated, and both were executed. But in the succeeding pontificate of Pius V., the proceedings being revised, the two brothers Caraffa were declared to have been unjustly condemned. At Easter, 1561, Pius IV. assembled the Council of Trent, which had been promulgated under Paul III. He was particularly intent upon checking the spread of heresy, which had taken root in several parts of Italy, besides the valleys of Piedmont, and especially in some districts of Calabria. The Spanish, French, and Venetian inquisitors, and a number of monks, to exterminate by fire and sword the heretics of Calabria. Emmanuel Philibert, duke of Savoy, after attacking with an armed force the Valdenses, who made a gallant resistance to the council, by the order of the pope, had the courage to give up the exercise of their religion within their own districts, subject to certain regulations. The quarrels between the Catholics and Protestants, in France, were more difficult to settle. Some of the French Catholic prelates, among others, the bishop of Lorraine, recommended large concessions to be made to the Protestants with the hope of reconciling them to the church, and Queen Catherine de' Medici wrote to the pope to that effect. The pope referred the matter to the council, and in the meantime Catherine published the edict of pacification, in January, 1562, which allowed the Protestants liberty of conscience, and leave to perform their worship in country places, but this act of the council was annulled by the pope in 1563.

The prelates sent by France to the Council of Trent, and several councillors of the parliament of Paris who were also ordered to attend in the name of the king, spoke loudly in the plenary sessions of the council, and it seemed disposed to render the bishops more independent of the see of Rome. The cardinal of Lorraine was of opinion that the mass and other offices should be performed in the vulgar or popular language of each country, but the Italian prelates, and Lainez, general of the Jesuits, supported the maintenance of the established form of worship, as well as of the papal authority in all its existing plenteude. The discussions grew warm, and it was only in the following year, 1563, that the council came to an understanding. [Trent, Council of.] The council terminated its sittings in December of that year, and the pope confirmed its decrees by a bull. This was the principal event of the life of Pius IV., by far the most important of all his predecessors. He was generous; and he embellished Rome; but he was charged with the common fault of nepotism.

PIUS V., Cardinal Michele Ghislieri, a native of Alessandria in Piedmont, and a Dominican monk, succeeded Pius IV. in 1566. He had distinguished himself by his zeal in support of the Inquisition, of which tribunal he was one of the leading members. At the same time he was austere in his morals, and wished to enforce a strict discipline among the monks and nuns, being more than fifty thousand of whom are said to have been at that time living and strolling about Italy out of their respective convents, regardless of any of the obligations enjoined by the rules of their orders. He also possessed a monastic order in Lombardy called the 'Umiliati,' possessed of considerable wealth, the heads of which led openly a most dissolute life, and even kept braves, or hired
assassins, to execute their mandates. Charles Borromeo, archbishop of Milan, who endeavoured to check these atrocities, was shot at by one of the monks while at prayers in his oratory. The ball however only grazed the skin; the assassins left the Papal galley and the Senato, and several of his prepost, or superiors of convents of the Umbriati, were executed. Pius V., having examined the whole affair, suppressed the order, and gave their property to the Jesuits and other benefactors.

Pius V. enforced the authority of the Inquisition over all Italy. There were at that time in several towns, especially in Tuscany, some scholars and other men of learning who advocated the doctrines of the Reformation. Some ladies also held such opinions, but they were discovered and desert ed by the town magistrates, such as Vittoria Colonna, Giulia Gonzaga, and Margaret, the wife of Emmanuel Philibert, duke of Savoy, were suspected of a similar bias. Pius demanded of Cosmo, duke of Florence, the return of these ladies. In Italy, a Florentine nobleman, who made a public profession of opinions considered as heretical: being given up to the Inquisition, he was put to death at Rome. The same happened to Palestrina, Bartocci, and Giulio Zanetti; the last, who was at Padua, being given up to the pope by the Venetian senate, on the plea that he was a native of Fano and a subject of the Papal State. Numerous informers were kept by the Inquisition in every town of Italy; and such was the terror produced by these visits, that the reading of a general bull was suspended by all, and deserted both by teachers and students. The pope also enforced the strict observance of the index of forbidden books, and enacted severe penalties against those who printed or incited financial affairs, or had any concern with the Antient Jesuits, those of Giunti of Florence, and others, declined greatly in consequence, and many printers emigrated to Switzerland or Germany. Pius V. enforced the canons against those priests who kept concubines; but instead of leaving to the civil magistrates the repression of this abuse, he insisted upon the bishops acting both as magistrates and judges, by means of armed men attached to theirepiscopal courts, and of prisons for the same purpose. This gave rise to numerous disputes between the civil and ecclesiastical authorities, especially at Naples and Milan. Similar disputes took place concerning the ecclesiastical inspectors and collectors sent by the pope to visit and demand accounts of all church property throughout Italy. Pius proceeded on the principle asserted in the false decreals, that the pope has the disposal of all clerical benefits throughout the world. He also reprobated the famous bull called 'In coma Domini,' which excommunicates all princes, magistrates, and other inhabitants of the regions possessed by the heresy, or who attempt to circumscribe the ecclesiastical jurisdiction, spiritual and temporal, or to touch the property or revenues of the church; and all those who appeal from the decreals of the pope to the general council, as those who say that the pope is subject to the council. He ordered this bull to be read every Thursday before Easter in every parish church throughout the Christian world. France, Spain, and the emperor of Germany strenuously opposed it: the latter sent an embassy to the court of Venice likewise forbade its publication. At Naples and Milan the Spanish governors did the same, but the bishops and monks refused absolution to those who in any way opposed the bull. After much altercation, some men of rank, the civil power obtaining its object, and the bull was set aside. In Tuscany the bull was allowed to be published, but rather as a matter of form than as a measure upon which judicial proceedings could be founded. The civil clergy were everywhere pretended by virtue of the bull to be exempt from all taxes, and refused the sacrament to the collectors and other revenue officers and their families. The duke of Florence, Cosmo de' Medici, threat ened to put the monks in prison, and prosecute them. The Tuscan bishops tried to conciliate matters, and to repress the arrogance of the clergy, but the disturbances continued till the death of Pius V. (The Famous Bull! In coma Domini, and all the remaining acts and all Infringers of Ecclesiastical Liberties, with a Preface, London, 1668.)

By a bull dated August, 1569, Pius created Cosimo de' Medici, who till then had only the title of colonel in discharge of some public functions, to be grand-duke of Tuscany, and his successors after him, and sent with the bull the model of a crown, ornamented with a red lily, the former ensign of the Florentine republic. Pius was a great promoter of the Christian league against the threatening arms of the Ottomans. After the glorious naval victory of the Curzolari, or of Lepanto, won by the Christian combined fleet against the Turks, in September, 1571, Pius caused Marcantonio Colonna, commander of the Papal galley, to give the signal charge, and make his triumphal entrance into Rome on horseback, preceded by the Turkish captives and spoils, and accompanied by the magistrates, noblemen, and heads of the trades of the city of Rome. He ascended the Capitol, and thence proceeded to the palace of the pope, which he reached with great honour. The whole scene was like a renewal of the anti Roman triumphs. Pius V. died of the stone, in May, 1572. He was austere and intolerant in his religious opinions, but was surprizingly distinguis hed for his waspish morals; he was learned, and a friend to learning, provided it did not encroach upon matters of belief. It is said that when some one told him that the people of Rome were dissatisfied with the austerity of his discipline, he answered, 'They will be still more grated at my death:'—and so it was; for that fickle people crowded round his dead body, endeavouring to touch his garments, as if they were relics. The Roman church has numbered Pius V. among its saints. He was succeeded by Gregory XIII.

PIUS VI. (Cardinal Angelo Braschi), a native of Cesena, was elected pope in 1774, after the death of Clement XIV. He was then fifty-five years of age, and had the reputation of being a bookseller, and of knowing very little of the art of public business. He had also, besides the advantages of a handsome person, a graceful demeanour and easy and affable manners. In his previous office of treasurer he had managed the public affairs of France so well, that, though nothing was ever proved against him, Ricci died shortly after, in his place of confinement, in November, 1775, and the pope ordered his remains to be interred in a solemn manner. [447 lines.]

In 1777, Pius VI. had a serious dispute with Leopold I., grand duke of Tuscany, and Ricci, bishop of Pistoja, on the subject of some grave moral offences which had been discovered in several convents. [LEOPOLD II. OF GERMANY, AND I. OF TUSCANY.] The question of jurisdiction was at last settled, but it left a coldness between the courts of Rome and Tuscany. A more important disagreement took place between the pope and Joseph II., Leopold's brother, and Charles VI., the emperor of Germany. Joseph accused the emperor of using his influence to suppress superfluous convents, and emancipating the clergy of his dominions from the supremacy of Rome in matters of discipline. The principal points upon which the emperor was accused were:—that he had ordered the bishop of Fulda not to submit to the jurisdiction of the bishops of their respective dioceses; that the bulls 'Vineam Domini' and 'Unigenitus,' and all other proceedings against the Jansenists, would not be enforced in Italy; and lastly, that a few universities and colleges of the Austrian states the Roman doctrines of the infallibility of the pope, of his temporal supremacy over secular princes, and his superiority over general councils, should no longer be taught. Pius VI. perceived in these reforms of Joseph II. a design to weaken the power and influence of the see of Rome, and he determined to make an effort to turn the emperor from his purpose. Accordingly he set out for Vienna in 1782, to visit Joseph, in order to communicate with him on the matters in question. For several centuries no pope had left Italy, and this movement of Pius VI. attracted universal attention. Monti wrote a poem on the subject, entitled 'Il Pellegrino Apostolico.'

Pius was received at Vienna with every honour; but he made little impression on the emperor, who referred the matter in discussion to his ministers, who were not favourably disposed towards Rome. The pope returned to his capital in discharge of some public business, and having lowered the dignity of the holy see without obtaining any good result. Next came the synod of Pistoja, which was assembled by the bishop Ricci in 1786, and passed several propositions that were highly censurable at Rome, such as that every bishop holds his authority from Christ direct, and independent of the pope; that he should every two years convoke a synod of the parish incumbents of his diocese; and that a national
When General Bonaparte invaded Northern Italy in 1796, he took possession of the legations, but at the same time offered to the pope conditions of peace. After some negotiation, the pope refused to submit to the onerous conditions imposed on him by the Directory. Bonaparte, who was then threatening the crown of Austria, openly blamed the Directory for their harshness towards the court of Rome, saying that was not the way to make friends in Italy, and he spoke very highly of several cardinals and prelates who were daily interceding for peace. (Correspondence of General Bonaparte, Letters of the 8th October, 1796, and 1st of January, 1797.)

Meantime however he took possession of Ancona and Loreto, after defeating the papal troops on the banks of the river Senio; but the terms he proposed to the pope were so greatly insulted that he granted it to him at Tolentino upon more moderate conditions than might have been expected. After the peace of Campofornio (October, 1797) and Bonaparte's departure from Italy, the agents of the Directory added vexation to vexation against the unfortunate pope, who, old and infirm, was unequal to the difficulties which crowded upon him. The papal treasury being drained, in order to pay the contribution of thirty millions of livres (1,200,000), the pope was obliged to seize the deposits in the Monte di Pietà, by which many families lost all they had. A tragic incident hastened the catastrophe. On the 28th December, 1797, a small band of revolutionists of Rome and other parts of Italy, who had been friendly with Pius VI, were suppressed by General Duphot, who was attached to the French embassy at Rome, having dined together in the palace of the French academy of the arts, and being heated with wine, and a great deal of talk, they rushed into the street.

The internal administration of Pius was liberal and mild. An unusual freedom of opinion and speech prevailed at Rome, a number of learned men gathered thither from other parts of Italy, many foreigners came in that capital, the fine arts were encouraged by the pope and by several of the cardinals, and modern Rome had perhaps never been, since the times of Leo X, so brilliant and so pleasant a residence as it was under the pontificate of Boniface. The frequent visits of illustrious travellers, who entered the scene, and rendered the latter years of Pius as gloomy and calamitous as the earlier part had been bright and prosperous. In the first period of that revolution, Pius VI solemnly condemned the abrupt changes made in France concerning the discipline and the property of the clergy; but with regard to general or secular politics he showed great temperance. He even encouraged a man of learning, Spedalieri by name, to publish, in 1791, a work entitled 'I Du father's Rights of Man. He was an honourable work, and to the king of Cyprus. But, unlike Paine and the other exponents of the rights of man in France, Spedalieri maintains that the Christian religion is the surest, the only guarantee of the rights of man and of civil freedom, and that social institutions, though they are the work of man, ought to be conformable to the Divine laws as revealed to us in the Scriptures. The work of Spedalieri was dedicated to Cardinal Rufolo, treasurer of the apostolic chamber, and Pius VI rewarded the author with a stall in the chapter of St. Peter's.

An accident which occurred at Rome in January, 1793, widened the breach already existing between France and Rome. Ignatius Bossi, an agent of the French republican party, being on his way to Naples, where he had been appointed secretary of embassy, made a foolish demonstration in the Corso, or high street of Rome, apparently to sound the opinions of the people. He appeared in a carriage, with several tricoloured flags, and distributed revolutionary tracts, vociferating something about liberty and against tyrants; but he soon found that the people of Rome were not prepared to listen to him. A mob was collected; he rushed off his carriage, and a brawl ensued in several places by the populace. The military came to the spot; but too late; some of the murderers were taken and tried; and yet the papal government, though innocent of the affair, was reproached by the French, and even condemned as a party to it. [Monti.] The pope then joined the league of the sovereigns against France, and strengthened his military establishment.
derogatory to his high office. Next came the compulsory
graduates of the French army, who, after taking an inventory
of all the valuables that still remained in the papal resi-
dence, ordered Pius to prepare to set out in two days. The
pope said he could not oppose force, but protested against
the forcible sequestration. On the 20th of February, Pius VI.
left the Vatican with a strong attachment of bayonets,
strong detachment of cavalry, took the road to Florence. He
was lodged first in a convent at Sienna, and afterwards in
the Carthusian convent near Florence, where he remained till
the following year, when the French, driving out of Tuscan
ty the grand-duke Ferdinand, and being threatened
by the Austro-Russians, who were advancing to the Adige,
ordered the pope to be transferred to France. They took
himp to a house of the See of Arezzo, where the old pontiff
was made to cross the Alps in a litter by the
pass of Mount Genevè, which was covered with deep snow,
to Briançon. From thence he was taken to Grenoble, and
afterward to Lyon, where he died, in Au-
gust of that year (1799), in the 62nd year of his age and the
24th of his pontificate. Just before his death the Roman
republie had ceased to exist, the French being driven out of
Italy by the Austro-Russians, and Rome was occupied
by Austrian and Neapolitan troops. The short period of
the so-called republican government, enforced by French
youthets, was one of unspeakable distresses for the people
of Rome: death, exactions, suspension of commerce, and
countenancing military rule, authorised licentiousness,
and general confusion of society, were the characteristics
of that time.

In the year 1802, after the restoration of the papal
government, the remains of Pius VI. were transferred to
Rome. The French government refused to allow Bonaparte
the request of his successor Pius VII., and deposited with
solemn pomp in the church of St. Peter.

(Potta, Storia d’Italia.)

Pius VII. (Cardinal Gregorio Barnaba Chiaramonti)
was born in the year 1742, of a noble family of Cesena,
which is supposed to have been originally a branch of the
French house of Clermont. He first studied in the college
of Rome, in the college of Moissac, and in the college
of the Jansenists, in 1758. He was appointed lecturer on phi-
losophy, and afterwards on theology, to the novices of
his order, first at Parma and then at Rome. Pius VI.
appointed him bishop of.Troville and in 1785 made him a
cardinal and archbishop of Imola. When Bonaparte took pos.
session of the legations, and annexed them to the Cisalpine
gnre, Cardinal Chiaramonti in a homily exhorted his
flock to submit to the new institutions, and to be faithful to the
Roman See. There was no negotiation on that subject, he said to have acquired him the good opinion of Bonaparte.
When the news of the death of Pius VI. in his exile at
Valence, in August, 1799, came to Italy, the concile being
 summoned to Rome by the new king of the new nation of
Austria, as Rome was in a state ofarchy. Cardinal
Chiaramonti repaired to the former city. Thirty-five car-
dinals assembled at Venice, in the Benedicine convent
of S. Giorgio Maggiore, in order to elect a new pope, a dignity
apparently not very enviable in those troubled times.
The deliberations of the concile lasted six months, and at
last Cardinal Chiaramonti was chosen, on the 14th of March,
1800, and crowned pope on the 51st of the same month,
under the name of Pius VI. In the following July the
pope made his entrance into Rome, and soon after appointed
Cardinal Consalvi his secretary of state, or prime minister.[Consalvi.] In the following year the peace of Lunéville,
being signed, accorded, as the French had promised, the
consul of France, ordered his troops to evacuate the Papal
territories, with the exception of the legations, which had
been formally incorporated with the so-called ‘Italians Rep-
ublic.’ Meantime the ecclesiastical affairs of France were
in a state of the greatest confusion. France was still
ominally Roman Catholic, but the clergy were no longer in
communication with the see of Rome, and were divided into
parties. One party consisted of those who had sworn
fidelity to the revolution, and were style ‘Prêtres asservis,’ or ‘constitutionnels;’ another was composed of those who opposed those changes that
had taken place in the administration of the church since the
accession of that year, and were called ‘prêtres indépend-
tsaires.’ Each party had its bishops, who were in a state of
schism towards one another. Many dioceses had no bi-
shops, and others had two; some of the constitutional priests
were latitudinarians in principle as well as in practice;
orders had many, contrary to the practice at Trent; and others professed Jansenist principles. The re-
fractory priests were generally soured by their past sufferings,
were intolerant by principle, and provoked persecution against
themselves rather than acknowledge the liberty of conscience
which the government had promised. In this confusion about one half of the population of France fol-
lowed no mode of worship, and professed no religion whatever.
A vast number of parish churches were shut up, and had
been so for ten years. Articles touchant les Affaires
Ecclesiastiques de France, vol. i. Thibaudet, Mémoires sur les Consulat.) Bonaparte wished for a concordat with
Rome. The pope appointed the prelate Spina and the
archbishop of Pinerolo, and the latter was named his brother Joseph, Cretet, councillor of state, and
Bernier, a Vendean priest, to treat with the pope’s nego-
tiators. At the same time Bonaparte, who was not himself
much acquainted with ecclesiastical controversy, listened
willingly to the advices of the various parties. Gregoire,
bishop of Bios, one of the leaders of the constitutional
clergy, was opposed to the concordat. According to him, the
church had no need of it: ‘She had done without it for twelve
centuries; the canons of the first four Ecumenical councils
were sufficient for its administration. Vacancies to the
sees should be filled up by election, by the bishops of the
province, under the presidency of the metropolitan. The Gallican
church ought to be untrammelled by Roman jurisdiction.
(Gregoire, Essais Historique sur les Libertés de l’Eglise
Gallicane.) Others advised Bonaparte to proclaim unre-
stricted religious freedom and liberty of worship. (De
Praet, Les Quatre Concordats.) Others told him that he
ought to take hold of. his hands and not to let Bonaparte
get the upper hand. Bonaparte demanded the return of
the pape, and the liberty of his religion, but he would have found not a few to support him.” (Jaurref, Mémoires sur les Affaires E-
clesiastiques.) But Bonaparte considered that if he were to
proclaim the religious community and give one half of
France against it, whilst the other half only a small part would support him in earnest. He preferred
therefore to be with the decided majority, as affording an
easier means of government. Bonaparte’s instructions to
his negotiators was, that they should not obtain the exclusive form of religion in France, and that therefore
the only thing that could be done was merely to state that the Ro-
man Catholic was the state religion, being that of the
majority of the people. ‘Tous les papes, et tous les mét-
quésiens!’ said the requisit; ‘3, that with regard to the nomination and institu-
tion of the bishops, they might take the concordat of 1516
between Francis I. and Leo X. as a basis; 4, that all monastic
orders require a spiritual head should remain exempt.
Above all he required the business to be promptly settled,
and be wrote to Rome to that effect. The pope despatched to
Paris Cardinal Consalvi, who smoothed down all difficul-
ties, and the concordat was signed at Paris, the 15th of July,
1801, and was ratified at Pius VI. at Rome, after some hesita-
tion and consultation, on the 14th of August following.
The principal scruples of the pope were concerning certain
articles called ‘organic,’ which Bonaparte appended to the
pope’s concordat, and which he proclaimed as laws of the state.
(Botta, b. xxi.; Thibau-
deau.)

From 1801 till 1804 Pius VII. enjoyed tranquillity at
Rome, which he employed in restoring order to the finances,
in ameliorating the judicial administration, in improving
the agriculture of the Campagna, and in other similar cares.
His personal establishment was moderate, his table frugal,
his habits simple, and his conduct exemplary. In May,
1804, Napoleon was proclaimed emperor, and the day after
he wrote to the pope requesting him to crown him so-
lemnly at Paris. After considerable hesitation Pius con-
sented, and set off from Rome at the beginning of Novem-
ber of that year, and was crowned at the twenty-first of
the cathedral of Notre Dame, after which the pope spent
several months in Paris, visiting the public establish-
ments, and receiving the homage of men of all parties.

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won by his unassuming yet dignified behaviour, and his unaffected piety. In May, 1805, he returned to Rome, and his troubles began again. On April 6th, 1806, he went to Fermo, and Urbino to the kingdom of Italy, stating in the preamble: 1, that the temporal sovereign of Rome had constantly refused to declare war against the English, and to enter into the same combination with the kings of Naples for the defence of the peninsula; 2, that the interests of those two kingdoms required a uniting trusted communication between them; 3, that the donation made by Charlemagne to the see of Rome was intended for the advancement of the Church. Soon after, Napoleon officially required the pope, through his ambassador at Rome, to expel from his dominions all English, Russian, Swedish, and Sardinian subjects, and to forbid his ports to these post-office carriers of war. He was, however, merely nominal, the French troops marching from and to Naples crossed and recrossed it at their pleasure, and the French also kept a garrison at Ancona, the only papal port of any importance. By degrees they extended their posts all along the Adriatic coast, and garrisoned the various ports. Some time after, a body of French troops, coming from Naples, passed through Rome, ostensibly to proceed to Leghorn, but they secretly turned out of the main road and surprised the night town of Civitavecchia, of which they took military possession. In all these places they confiscated whatever English property they could find. The papal troops at Ancona, Civitavecchia, and other places, were ordered to place themselves under the direction of the French commanders, and some officers who refused to do so were arrested and kept in confinement. Napoleon in the mean time found fresh grounds of quarrel with the pope. He wished to declare the marriage of his brother Jerome, with an American Protestant lady null; but Pius refused, saying that although the church abhorred marriages between Catholics and heretics, yet if they were contracted in Protestant countries, he thought the ceremony was being and indisissolvable. ('Letter of Pius VII: on this important subject, in Artaud, Vie du Pape Prie VII, Paris, 1836.) He next accused the pope of dilatoriness in giving the canonical institution to the bishops elected to vacant see; and also, that he was continually working in the court of Rome on the ground of the non-execution or interpretation by the French of several articles of the concordat, especially as to the Venetian territories, which had been annexed to the Italian kingdom after the concordat was made, and which the pope did not therefore include in its provisions. Eugene Beauharnais, viceroy of the kingdom of Italy, wrote a very able and conciliatory letter to the pope, in order to bring about an armistice, and the pope was induced to invite the bishops elect to Rome, in order to receive the canonical institution, when a threatening letter came, written by Napoleon from Dresden, after the peace of Tilsit, in the summer of 1807, in which he said 'the pope must not take him for a Louis de Bonaparte;' that his anathemas would never make his soldiers drop their muskets; that he, Napoleon, if provoked too far, could separate the greater part of Europe from the Roman church, and establish a more rational form of worship than the one which the pope was the head, that such a thing was easy in the actual state of people's minds,' &c.; and he forbade Eugene to correspond any longer with the pope, or send the bishops elect to Rome. Napoleon, in a word, would have all peoples of sedition against their sovereign.' Matters were now brought to an open rupture. A French force under General Miollis entered Rome in February, 1808; took possession of the castle and the gates, leaving however the civil authorities in possession. The cardinal had to leave the city, and, taking his breviary under his arm, accompanied the
general to the gate, where his carriage was ready, and drove off under an escort. He was taken first to Grenobîne, from whence he was removed, by order of Napoleon, to Savona in the Riviera of Genoa, where he remained till June 1812, when he was sent to Fontainebleau, by an order from Napoleon. During his stay at Savona, Napoleon convoked a council at Paris of the bishops of his empire, but he found that assembly less docile than he expected, and he dissolved it without any conclusion being come to. The great question was how to fill up the vacant sees, when the pope refused the canonical institution. The pope at the same time would not recognise Napoleon a divorce from his first wife Josephine. In short, Napoleon found that until the pope submitted, he could not come to an agreement with the armies of one half of Europe. (Thibaudau, Le Consulat et l'Empire, ch. 77; Botta, Storia d'Italia, b. 25.) The plan of Napoleon was to have the pope settled at another bishop of the Papal State, and his secular subject and his pensionary, and to have himself the nomination not only of the bishops, but of the cardinals also, by which means he would have added to his already overwhelming temporal power the incalculable support of a spiritual authority which extends over a great part of the world. The resistance of Pius disappointed his views. 'Strange, but true,' exclaims Botta, 'in this instance the independence of the church was the only remaining prop of general liberty, and if, in the exclamation of Pius, we interpret the term left against a universal and overwhelming tyranny.' Napoleon at last imagined that by removing Pius to Fontainebleau, he might succeed in overcoming his firmness. Pius was again obliged to make a long journey with the greatest reluctance, to Fontainebleau, on the 1st June, 1812, and was lodged in the imperial palace, and treated with marked respect. Napoleon had set out on his Russian expedition. After his return from that disastrous campaign, in December, 1812, he went to see the pope, embraced him, and treated him with studied attention; he also allowed several cardinals who were at Paris to repair to Fontainebleau, and at last, chiefly through their persuasions, he prevailed upon him to resign the government of the Papal State on the 25th January, 1813. It is not true, as some have stated, that Napoleon, in one of his conferences with Pius, had lifted his hand against him and struck him. Paccâ ('Memorie Storiche,' part iii, ch. 1) denies this on the authority of Pius himself, but thinks it very probable that Napoleon spoke to his prisoner in an authoritative and threatening tone.

The principal articles of the concordat were, 1. That the pope should give to the bishops who might from time to time be reinstated, in the regular concordats, the profession of thirty months latest after their nomination by the emperor, the canonical institution. If this were not granted after six months, the metropolitan of the province (and on his default, the senior bishop should give the institution to the bishop of Avignon) which have jurisdiction over the see for a twelvemonth; 2. the pope should have the nomination to ten sees of France and Italy, besides that of the six bishops, called suburbicarians, in the neighbourhood of Rome; 3. the pope should make the investments of his own electors in the see of Rome, and not leave it to the French, order to obtain the places in the church of Rome, which had been abolished by the Concordat of 1801. Napoleon hastened to publish the articles of the concordat, and to give them the force of laws of the empire; after which he granted free access to the pope to all cardinals and others who chose to repair to Fontainebleau. Pius, who had scruples concerning some of the articles which he had signed, laid them before the cardinals, and asked their opinion. Several of the cardinals, especially the Italian ones, such as Conti, Storni, and others, staid with the pope, but a number of them, who were contrary to the canon law and the legitimate jurisdiction of the Roman see, and pregnant with the most sordid evils to the church, and they urged the necessity of a prompt retractation. They quoted the well-known words of the council, 'Ecclesiastical wars having ended to the emperor Henry V. the right of investiture, hastened to submit his conduct to the judgment of a council assembled in the Lateran, and the council revoked the cession.' [Paschal II.] Upon this Pius wrote to Napoleon, on the 24th of March, retracting his concessions, but proposing a new basis for a concordat; Napoleon however took no notice of the retractation, except by disabling some of the cardinals who, he thought, had influenced the pope. Napoleon set off for Fontainebleau, and the affair with the pope remained in suspense. It was only after the defeat of the French armies and their expulsion from Germany that Napoleon proposed to refer to the pope the Papal States, south of the Apenines, if the pope would agree to a concordat. Pius answered, that he would not enter into any negotiations until he was restored to Rome. On the 22nd of January, 1814, an imperial commission, who were to excommunicate the pope, left Fontainebleau the following day. None of the cardinals were sent to accompany him. He set off accompanied by an escort, and was taken to Italy. On arriving at the bridge on the river Nura, in the state of Parma, he met the advanced posts of the Neapolitan troops under Murat, who was then making common cause with the allied powers against Napoleon. Murat had taken military occupation of the Roman state, but he offered to give up Rome and the Campagna. Pius however preferred stopping at Casena, his native town, until the political horizon was cleared up. After the abdication of Napoleon and the peace of Paris, Pius made his entrance into Rome, on the 24th of May, 1814, in the midst of rejoicings and solemnities. Pope Pius VII. sent two faithful Consuls soon after resumed his office of secretary of state. By the decisions of Vienna the whole of the Papal States were restored, including the legations, which were not however evacuated by the Austrian troops until after the fall of Murat, in 1815. The main life of Pius were spent in comparative tranquillity, though not in idleness. He applied himself to adapt, as far as it was practicable, the civil institutions of his dominions to the great changes which had taken place in the social state of Europe. 'The year proper' of the 1816, he confirmed the suppression of all feudal imposts, privileges, monopolies, and jurisdictions; he abolished every kind of torture, including that called the 'corda,' or 'estrapade,' which was formerly a frequent mode of official punishment. He formed a land-tax; retained the register of hypogeà, or 'mortgages,' instituted by the French; laid down the basis of a new code of public administration, and in November of the following year he published a new code of civil procedure, in which he regulated the costs of judicial proceedings. He maintained the commercial courts established by the French, as well as the new system of police, enforced the penal code which had been introduced by the French, and which was inoperative and corrupt. (Tournon, Etudes Statistiques sur Rome, b. iv, ch. 6.) Unfortunately however the old system of secret proceedings in criminal matters was restored, as well as that of the ecclesiastical courts, which the French had abolished. Napoleon had made some important alterations in the form of proceeding of the Inquisition, abolishing torture as well as the punishment of death for offences concerning religion. He did probably all that he could do as a pope, and certainly more than any pope had done before him. Cardinal Consalvi took vigorous measures to extirpate the banditti of the Campagna; and in July, 1819, he ordered the town of Sonnino, a notorious nest of incorrigible robbers, to be razed to the ground. With regard to spiritual matters, Pius concluded a new concordat with France, Naples, Bavaria, and other states. He condemned by a bull the political society of Carbonari, as an 'other secret society.' In the month of July, 1829, Pius, who was then eighty-one years of age, had a fall in his apartments, and broke his thigh. This accident brought on inflammation, and after a few weeks he died, on the 29th of August, universally regretted. He was succeeded by his nephew, who, by the will of the late pope, was readily elected. His character was that of a true Christian, and his general benevolence and charity. Free from nepotism, modest, unassuming, and personally disinterested, he was a staunch though temperate defender of the rights of his see, and his meek bearing and patient endurance of every kind of calumny and abuse, were an example to the whole Christian world, without distinction of community or sect, during his long struggle with his gigantic and engenious adversary.
PIUS VIII. (Cardinal Castiglioni) was elected in March, 1829, to succeed Leo XII., and died at the end of the following year. He was succeeded by Gregory XVI. No important events occurred during his pontificate. Pius VIII. died just before the explosion of the abortive attempt at insurrection in the Romagna, in consequence of the events of Paris, of July, 1830.

THE. The private assay within the Mint, which sanctioned the delivery of the coins to the owner of the bullion, was not considered by our ancestors as a sufficient security for the integrity of the coins, but they required that the assayers should be subjected to a trial by a jury, and the master could receive his discharge; and this trial was repeated at such short intervals as to form a sufficient check upon improper issues of the money. This final examination is technically called the Trial of the Pix, from the box in which the boxers have been selected, that purports to be contained. They are secured by three locks, the keys of which are respectively in the custody of the warden, master, and comptroller of the Mint.

The first regular public trial of the Pix upon record, according to Madox (Hist. Excheq., vol. 1, p. 291), took place in the ninth and tenth year of Edward I., when the king commanded, by writ, the barons of the exchequer to take within the Mint, the weights of the ryal, the half-ryal, the groat, the half-groat, the shilling, the sixpence, before they retired from the exchequer, to open the boxes of the assay of London and Canterbury, and to make the assay in such manner as the king's council was wont to do, and to take an account thereof, so that they might be able to certify the king touching the same, whenever he should please.

From the form of this trial laid down in an indenture of the 18th Edward III., it was then to be made regularly every three months. In subsequent reigns, however, down to a late period, this trial was made at uncertain times. In the reign of George II. it was called for when two or three millions had been coined. The practice of more modern times has been to hold a trial for a Pix, usually upon the appointment of a new master of the Mint, in order that the master who has retired may receive his discharge.

As the authority under which these trials were held occasionally varied, so did likewise the persons who sat as judges in them; and they were sometimes the members of the king's council, then the barons of the exchequer, and again the members of the privy council as judges of the Star Chamber, where sometimes the king himself presided, as did James I., at an assay which was made upon the 9th of May, 1611. During the period of the interregnum, in which at least six trials of the Pix were held, the authority and judges were in almost every instance varied. The court is composed of such members of the privy council as are appointed for that purpose, or, in the absence of the chancellor, or, in his absence, the chancellor of the exchequer, presiding.

Ruding was unable to discover any very ancient ceremonies of the forms of the trial under our public authority. He found one however among the Harleian manuscripts in the British Museum (No. 698, fol. 169) which professed to be the order of older times. It was evidently derived from an earlier date, inasmuch as the oath of the commoner is called the king's, and not the queen's, and was drawn up by Sir Richard Martyn, warden of the Mint, who held that office from the second to the thirty-seventh of Elizabeth. Ruding, in the appendix to his 'Annals of the Connaught of Britain,' has given an abstract of the Pix verdicts from 1603 to 1802.

'The modern practice,' says Ruding, 'is for the master of the Mint to present a memorial praying for a trial of the Pix. Upon this the chancellor of the exchequer moves his Majesty in council, who commands the trial to be held; and the members of the privy council are accordingly summoned to meet at a certain day and hour (eleven o'clock in the forenoon) at the house lately and intrusted by the usher within the receipt of his Majesty's exchequer at Westminster. A precept is likewise directed by the lord-high-chancellor to the wardens of the Goldsmiths' Company, requiring the warden to cause and set down the names of a competent number of sufficient and able freemen of their Company, skilful to judge of and to present the defaults of the coins, if any should be found, to be of the jury, to attend at the same time and place. This number is usually twenty-five, of which the assay-master of the Company is always one. When the court is formed, the clerk of the Company returns the precept, together with the list of names; the jury is called over, and twelve persons are sworn.

'The presiding judge has his charge, which used formerly to be general, like the oath, to examine by fire, by water, by touch, or by weight, or by all or by some of them, in the most just manner, whether the monies were made according to the indorsement and standard trial-pieces, and within the remedies; but in 1734 the lord-high-chancellor Talbot directed the jury to express precisely how much the money was within the remedies, and the practice which he thus enjoined is still continued. The other parts of the charge are necessary. They according to the ability of the president and his knowledge of the subject.

'When it is concluded, the pix is delivered to the jury, and the court is commonly adjourned to the house of the president, where the verdict is afterwards delivered in writing.

'The jury then retires to the court-room of the duchy of Lancaster, whither the pix is removed, together with the weights of the Exchequer and Mint, and where the scales which are used upon this occasion are suspended, the beam of which is so delicate that it will turn with six grains, when loaded with the whole of those weights, to the amount of 40lbs. 5s. in each scale.

'The Pix is then seated, the indeniture, or the warrant under which the master has acted, is read. Then the pix is opened, and the money which had been taken out of each delivery and enclosed in a separate paper parcel, under the seals of the warden, master, and comptroller of the Mint, is given into the hands of the foreman, who reads aloud the indorsement, and compares it with the account which he lies before him. He then delivers the parcel to one of the jurors, who opens it, and examines whether its contents agree with the indorsement.

'From the minutes which I took at a trial of the pix in the year 1799, it appears that it then contained—

Guineas
Half guineas
Thirds of guineas, or pieces of seven shillings 1793,

making by tale 914f. 13s. 6d., being the pieces taken from ninety-three deliveries, from the 3rd of December, 1794, to the 27th of March, 1799, which deliveries amounted in weight to 146,220lbs.

The silver coins in the pix were only one gram, one quarter-shilling, one half-silver, and one penny, making by tale 914f. 13s. 6d., being the pieces taken from ninety-three deliveries of 94lbs. 8ozs. 10dwt., on the 16th of December, 1795.

When all the parcels of gold were opened and found to be right, then the monies contained in them were mixed together, and afterwards weighed in five parts.

By calculation at the rate of 46l. 14s. 6d. to the pound Troy, which is the proportion required by the indenter, they ought to have weighed 190lbs. 9ozs. 9dwt. 15grs.; so that they were deficient one pennyweight fifteen grains. But the remedy on 190lbs. 9ozs. 9dwt. 15grs. is 1lb. 3ozs. 16dwt. 9grs.; they were therefore within the remedy by 1lb. 3ozs. 16dwt. 9grs.

'The jury then took from the said monies so mingled together, 2 of the Exchequer guineas, thirteen half-guineas, and twelve seven-shilling pieces, for the assay by fire. The above coins were all the different sorts contained in the pix. By tale they amounted to 46s. 14s. 6d., and they were in weight exactly one pound, which is the quantity taken for that purpose, particular attention being paid that some of every sort of coin shall be selected.

'The indented standard trial pieces of gold and silver, of the dates specified in the indenter, were then produced by the proper officers, and a sufficient quantity cut off from
PIZARRO, FRANCISCO, the discoverer and conqueror of Peru, was the natural son of Gonzalo Pizarro, an officer who served with considerable distinction under the Great Captain in the Italian wars. Gomez relates that Francisco was born upon the steps of a church, and in his earrings, in 1, was buckled by him. The tradition is, that he was born at Trujillo, but all agree that he was born at Trujillo, about the year 1499. His education was so completely neglected, that he never learned to read or write, and he was employed by his father in tending pigs; but getting tired of this occupation, he ran away from his companions, became a soldier, and shortly afterwards embarked to try his fortune in the New World. The first occasion on which he gained distinction was during the expedition of Ojeda to Tierra Firme, in 1501. He was landed in the volunteers in the new conquest. He gained the confidence of Vasco Nuñez de Balboa, whom he accompanied in his expedition to Mexico. On these occasions Pizarro showed himself superior to all companions in courage, enterprise, and powers of endurance, and he became the favourite leader of the soldiers, who never felt so much confidence as when they were under his orders. Pizarro had seen fourteen years of arduous service, and was still one of the least weary men in the little band in the desert, which included Luque and Diego de Almagro in the project of extending the Spanish conquests along the southern coast. Pizarro and Almagro could only give their personal labour and experience, as daring and tireless adventurers, their services to the 26,000 ounces of gold towards defraying the expenses of the expedition. Pizarro sailed from Panama in November 1524, with one small ship, eighty men, and four horses, to attempt the conquest of a great country; leaving Almagro to follow with reinforcements as soon as he could raise them. Pizarro shaped his course to the south-east, but having in ignorance selected that period of the year in which the winds and currents were opposite to him, his progress was very slow. He touched at several places in Sierra Firma, where he found a vast uninhabited country, the low grounds of which were covered with swamps, the higher with impenetrable forests, having few inhabitants, and those fierce and hostile. Fatigue, famine, and disease having wasted his little band. Pizarro was compelled to await the arrival of Almagro at Chiechana, who at length joined him, having undergone equal hardships. With unbroken spirit they decided on their course of action. Pizarro remained at Chiechana while Almagro returned for fresh forces, which Luque with difficulty persuaded Pedrarias, the governor of Panama, to furnish. With these reinforcements, in the year 1526, Pizarro advanced from Chiechana to the south, and explored the coast of Quito. He entered the bay of Saint Matthew, where he found a fertile country, the inhabitants of which were clothed in garments of woolen and cotton, with ornaments of gold and silver. This country being too populous to attack, Almagro returned to Panama for further aid, and Pizarro retired to a neighbouring island. The new governor of Panama, Pedro de los Rios, not only would not permit any new levies to be made, but even refused a vessel to bring away Pizarro and his band. Pizarro refused to obey this command, and drove Pizarro and his companions to the side, with whom he had his sword, desired those who chose to remain with him to cross to his side: thirteen alone of his hardy veterans had sufficient courage to do so, with whom, and the crew of a small ship, he set out to his subsequent victory. Pizarro executed his examination of the coast of Peru. He landed at Tumbez, where there was a palace of the Incas, and he ranged for some time peacefully along the coast. The government of the country was sufficiently privatized only for ornament, but for utensils of common use, filled Pizarro and his companions with wonder. He returned to Panama in 1528, having encountered, during his absence of three years, greater hardships and dangers than any army in other adventures. The government of the country was regulated by his accounts of the opulence of the newly-discovered country, and it was settled by the associates that Pizarro should proceed to Europe to obtain the sanction of the emperor. By his address he succeeded in gaining the attention of Charles V, and his ministers, and without bestowing a thought upon his associates, he obtained for himself the appointments of governor and captain-general, and adelantado of the country, and the supreme authority, both civil and military, stipulating in return to equip a certain force, and remit one-fifth of all the treasure that he should acquire to the crown. Pizarro was so poor, that without the assistance of Cortez he could not have undertaken his part of the adventure. At length he sailed from Spain with only half the number of men required, among whom were his three brothers. He returned to Panama in 1538, and having with difficulty collected Almagro, and his six hundred companions, at his perfidy, he sailed in February, 1531, with 186 soldiers, of whom 36 were horsemen, leaving Almagro as before to follow with reinforcements. Pizarro first surprised the principal town of the province of Cauca, where he obtained a great booty, and sailed with his possessions to Panama, and hurried his ships to Panama and Nicaragua with remittances, which soon procured him recruits. Proceeding southward he attacked, and, after a fierce resistance, took the island of Guayaquil, in the bay of Guayaquil. At Tumbez he determined to remain three months, in consequence of a violent dissenter among his men. At the mouth of the river Pira he founded the first Spanish settlement, and called it S. Michael. Fortunately for Pizarro a civil war was at this period raging in Peru between the brothers Atahualpa and Huascar [Paxu], and each party requested his assistance against the other: Pizarro seized the opportunity, and marched up the country to Caxamacar. Having posted his forces to the river, he caused his baggage to be carried in a carriage which was encamped near that city, where the sight of a precious metal of precious metals that he found inflamed his cupidity to such a degree, that he resolved upon its destruction, placing it in the hands of Pizarro and the soldiers. At a given signal, when Atahualpa was returning Pizarro's visit, the Spaniards opened a fire upon the followers of the Inca, the suddenness and surprise of which completely subdued them, and as no resistance was attempted, Pizarro carried off the unfortunate Atahualpa a prisoner to his quarters, where he was confined in a room 22 feet long by 16 feet broad. Having soon discovered the inatable avarice of the Spaniards, Atahualpa offered as his ransom to fill this room with gold as high as he could reach. The offer was eagerly accepted by Pizarro, without the smallest intention of performing his part of the agreement. Before the whole was collected, the soldiers became so much excited at the sight of such vast treasure, that it was found impossible to restrain their impatience, and after setting aside the fifth part for the crown, and a share for Almagro's party, 1,298,500 pesos, or ounces, were divided. Pizarro's share was 5050 marks of silver, and 57,200 ounces of gold. Having obtained the ransom, he left Panama and returned to Spain, where his feelings were soon excited to hatred and a desire of revenge, on perceiving that he was an object of scorn and contempt to Atahualpa, who had discovered that Pizarro and Almagro were not the same men that he had expected from his country, reading and writing. Pizarro accordingly caused him to be put to death in 1533. The government of Peru was now so far overthrown, and the country so torn by insurrectional contestions, that no effectual opposition was offered to Pizarro, who marched upon and captured Cuzco, the
plerunder of which city exceeded in value the ransom of Atahuapla.

In 1534, Ferdinand Pizarro landed in Spain with the royal share of Atahuapla's ransom, when Francisco's authority was confirmed with new power and privileges. Almagro was appointed admiral and a country to be conquered to the southward of Pizarro's government. The reconciliation between Almagro and Pizarro had never been sincere; their evil passions were however for the present suppressed, and Almagro returned to the conquest of Chile, while Pizarro busied himself with the internal government of Peru, in the arrangement and administration of which he showed considerable judgment. In January, 1533, he founded the city of the name of Ciudad de los Reyes. In 1536 the Peruvians rose and endeavoured to throw off the Spanish yoke: they cut off several detachments, and completely blockaded Pizarro in Lima, and his brother in Cuzco. This brought Almagro from Chile, who, having defected the Peruvians, attacked Cuzco, took prisoners Pizarro's brothers, and subsequently Alvarado also; but certain conspirations preventing him from attacking Pizarro immediately after, the viceroy was enabled to collect his forces and attack Almagro, whom he took prisoner, and soon afterwards tried and executed in 1538. Pizarro's partiality in entirely leaving out the followers of Almagro in the subsequent allotment of lands, completely alienated them, and the enmity of the young Almagro, who had become the rallying point for all who were disaffected towards Pizarro. A conspiracy was formed against him, and on Sunday, June 26, 1541, the conspirators, sixteen in number, headed by Herrada, entered the governor's palace at mid-day, and seized those in hotchpots, and succeeded in reaching the staircase before an alarm was given. Pizarro, with his half-brother Alcántara, and a knot of faithful friends, defended themselves to the last. They fell, one after another, till Pizarro remained alone. A length, exhausted by the long conflict, and unable to parry the numerous blows aimed at him, he received a thrust in the throat, and expired in the 62nd year of his age, full of strength and vigour.

Robertson says of Pizarro, 'With a temper of mind no less daring than the constitution of his body was robust, he was foremost in every danger, patient under the greatest hardships, and unsubdued by any fatigue. Though so illustrious at that he could not even read, he was soon found to be formed for command. Every operation committed to his conduct proved successful, as, by a happy but rare conjunction, he united perseverance with ardour, and was as cautious as he was bold in his plans. The soldierly qualities of intrepid valor, indefatigable activity, insurmountable constancy in enduring the hardships of military service in the New World, he added the address, the craft, the dissimulation of the politician, with the art of conquering and subduing, and sagacity to penetrate into those of other men.'

(Vidas de Españoles Célebres, par Don M. F. Quintana; Robertson's Hist. of America; Cremona.)

PIZZO. [CABIRIA.] PLACE. [LAPLACE.]

PLACENTIA (Conchology), Schumacher's name for the Placenta of authors.

PLACENTA, in Botany, is that part of a seed-vessel on which the ovules or seeds are placed. It is always of a soft cellular texture, and is commonly found occupying the margin of a carpel. It is however as often confined to a single cell, as in nettles, and many other plants. Morphologists usually regard it as a mere cellular expansion of the margin or surface of a carpel; but there seems to be no means of reconciling with this view some kinds of parietal placenta and all kinds of the free central. This had led the opinion that some placenta are merely an expansion of the axis of growth, round and over which the carpellary leaves are folded; and there can be no doubt that this is true of Primula, Lobelium, Lycoris, and many other plants. It is however as yet very imperfectly understood, and will probably be found connected with systematic points of great value. (Lindley's Introduction to Botany, 3rd ed., p. 208.)

P L A N C T E R [Pitcairna.]

PLACENTULA, Schumacher's name for a genus of micromorphic Foraminifera.

PLACITUS PAPPYRIEINSIS, Sextus, sometimes called by mistake Sextus Platonius, or Sextus Empiricus, the author of a work entitled 'De Mediamentis ex Animalibus.' His age is unknown, but he is supposed to have lived about the 2nd century. He was a native of Greece, and is called Papiiensis; but all that is known of him is that he was a physician, as appears from various parts of his work (cap. 27, &c.). It is written in Latin, and consists of thirty-four short chapters, each of which treats of some animal that was considered not to possess any certain medical properties in different parts of its body. It is of little or no value, as may easily be seen from the following specimen:—against a quaran fever he directs the heart of a hare to be hung up in the sun; in a disease of the liver, he recommends a young puppy to be dressed and eaten (cap. 11); for persons affected with phthisis or a bad cough, he orders the saliva of a horse to be taken, mixed with wine or water: 'This,' says he, 'I have myself tried, but it is a matter of notoriety (experientia sum est) that the horse will die' (cap. 14).

The work has been frequently published both separately and in different collections. It was first published in 1538, Norimb., 4to; in the same year, Baso, 8vo. It inserted in the first volume of the Medici Artis Principes, published by H. Stephens, Paris, 1567, in the collection edited by And. Rivinus, Lips., 1534, 8vo.; in the thirteenth volume of the old edition, 16th, 4to., and in Ackermann's collection entitled 'Parabiblia Medicomentorum Scriptores Antiqui,' Norimb. et Altorf, 1788, 8vo. There are two German translations, one by Henesch, Basel, 1582, 8vo.; and the other by May or Mayer, Magdalen, 1588, 8vo. The fourth parison. Afer, in his work entitled 'De Remedios ex Animalibus,' has borrowed very freely from this treatise, and indeed copied great part of it almost word for word.

PLACOBRANCHUS. [Laplace.] M. Rang's name for a family of mollusks, forming his fifth family of Gasteropoda (Cuv.), but placed by Cuvier among his Nudibranchia. [Nudibranchiata, vol. xi., p. 362.]

M. Rang (Manuel) observes that M. de Férussac had shown that the Mollusks which had been sent to M. de Férussac from the Mediterranean, and in which M. Rang at once recognised the genus Acteon of Oken, or Elysia of Risso. M. de Férussac pointed out to M. Rang that the brachiopod covered the back and upper surface of the lobes, under the form of a vascular net, and therefore M. Rang is of opinion that it should be added to his family of Placobranchia, which had previously contained but one genus, viz. Placodonta.

PLACOCRANCHUS. [Nudibranchiata, vol. xvi., p. 362; Placobranchiata.]

PLACUNA. [OYSTERS; Pectinidea, vol. xvii., p. 363.]

PLACUNANOIMA. [Pectinidea, vol. xvi., p. 364.]

PLACUS. [Plaque.] Found in old cemeteries, confined solely to the Canto-Fermo, or Plain-Song, or PlainCHANT, and signifying collateral. The Plain-Song was seldom allowed to exceed the compass of an octave, and never went beyond nine notes. When the octave was so divided that the fifth was above the fourth, the mode or key was said to be Plagiai. [AUTHENTIC.]

PLAGIOSTOMA (Conchology). [Spondylidae.] M. Daninril uses the term Plagiostroma to denote the Scleractinia, Cuvier's first family, including the Scleractinia, and the Rays (Rata, Linn.), of the Chondropterygids branchiata.

PLAGIUS. [Pestilence.]

PLAGIUS SECTUS. [Sextus Platonius or Empiricus, vol. xi., p. 362.] Plagia is also Brown's name for a fish: 'The little brown Sole with a pointed tail.' (Jamaica, p. 445.)

PLAID, the ancient garb of the Scots Highlanders; still worn by the 42nd, 72nd, 97th, 92nd, and 93rd Highland regiments.

The belted plaid consists of twelve yards of tartan, which are plaited, and bound round the waist by a leather belt, the upper part being attached to the left shoulder.

In the 42nd, 72nd, and 93rd regiments, the five-yarded half wearing of the British infantry, it is directed that in a Highland corp serving in Europe, in North America, or at the Cape of Good Hope, each serjeant, corporal, drummer, and private of the said regiments shall wear six coats once in two years, and a purse every seven years. (James's Military Dictionary, 8vo., Lond. 1810.)

In the glossary to Jamieson's 'Popular Ballads,' 8vo,
Edinb. 1806. Plaiding is interpreted ‘blanketing.’ The plains of the shepherds, the author adds, in the pastoral countries in northern Scotland are actually a finer sort of blankets: and so are the plaidas worn by the lasses and daughters of the peasants in many parts of the north-east of Scotland at this day.

PLAIN CHANT. **[PLAIN SONG.]**

*Plainsong,* or *Cantus Firmus* (Lat.), or *Canto Fermo* (Ital.), a name given by the Church of Rome to the ecclesiastical chant, which most probably was borrowed partly from the music of the Greeks and partly from that used by the Jews in the *Song of Solomon.* *Plainsong* is an extremely simple melody, if melody it may be called; it admits but one measure, the duple, and only notes of equal value. It is rarely allowed to extend beyond the compass of an octave, and never exceeds nine notes; and the staff on which the notes placed consists of but four lines. The clefs are those of c and g. To St. Ambrose, archbishop of Milan, the church is supposed to be indebted for the regular form of the Plain-Song, and to the pope St. Gregory, surnamed the Great, for having perfected and brought it into state in which it still continues to be used in the orthodox Roman church.

PLAIN SAILING. **[SAILING.]**

PLAINS. All the parts of the dry land which cannot properly be called mountainous are plains, and such compose by far the greater part of the earth's surface. Thus, for instance, it has been estimated that in South America the plains are to the mountainous country as 4 to 1. We are not aware that a similar calculation has been made for the other parts of the world, nor are there perhaps materials sufficiently exact for the purpose.

The word plain has but an indefinite meaning of itself, and is to be rightly understood only when used in opposition to the word mountains, or when referred to the name of some known place, in which case it means the country itself so designated, or the environs of some particular spot. Thus we speak of the plains of the plains, the valleys of the plains, the plains of Lombardy, the plains of Quito, &c.

It was a great error to imagine that by the word plain a perfectly horizontal surface is always understood. In its usual acceptance it means a greater or less extent of country, flat in its general level as compared with a mountainous country. The more perfectly even and horizontal the surface, the better does it deserve to be called a plain, such as the plains of Venezuela and of the lower Orinoco, Mesopotamia, &c. But the surface of the ground may be gently waving, as Salisbury plain, and the Ukraine; or more prominently undulated, as the plain round Paris; or it may be studded with hills, as the plains of the Cassinapiere; or it may be traversed by valleys or moor-like depressions, like that part of France which lies between the Loire and the Garonne, or intersected with deep ravines, as the central plains of Russia, without ceasing on such accounts to be plains.

Plains have been divided into two classes, high and low; but a moment's reflection will show that such denominations can apply rigorously only to the two extremities of a scale of elevation, at the bottom of which would stand, for example, the delta of Egypt or the llanos of South America (which latter are raised only about 150 feet above the level of the ocean, and in some places even less), and at the top the plains of Antisana, 12,455 feet above the sea-level; whereas the greatest number of plains are found at intermediate heights, as the following will show:

<table>
<thead>
<tr>
<th>Feet above the Ocean</th>
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</thead>
<tbody>
<tr>
<td>The plains of Hungary</td>
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<tr>
<td>The extensive plains on the north of the old continent from the Schelde to the Yenisei</td>
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<tr>
<td>Plains of Moscovy</td>
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<td>Plains of Lithuania</td>
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<td>Plains of Lithuania</td>
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<tr>
<td>Spain</td>
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<tr>
<td>The Pampas of Valdivia</td>
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<tr>
<td>Auvergne</td>
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<tr>
<td>Switzerland between the Alps and Jura</td>
</tr>
<tr>
<td>Steppes of the Kizhis</td>
</tr>
<tr>
<td>Bavaria</td>
</tr>
<tr>
<td>The plains of the two Castilles</td>
</tr>
</tbody>
</table>

**Myasar.**

Table-land of Persia

| 2300 to 2600 |
| 3800 to 4200 |

Though we generally regard those plains which are the least raised above the surface of the ocean as the lowest, it must not be forgotten that round the Caspian and Aral Sea there are plains that are one hundred square miles considerably depressed below the sea-level; as is also the case with the plain or valley of the Jordan.

The term *plateau* has often been given exclusively to elevated plains, but this also is incorrect, inasmuch as by a plateau is sometimes meant a great extent of country considerably raised above the rest of the land, and having its mountains, its plains, and its valleys, as is particularly exemplified in the minor plateau of Albania, and in the great plateau of Central Asia. The latter contains four great chains of mountains, the Altai on the north, the Thian-Chan and the Huen-lun in the interior, and the Himalaya on the south, between which are the vast plains of Dzungaria, of Tongtou, and of Tibet, with their rivers, valleys, and lakes.

Table-land, properly so called, is an elevated plain rising abruptly from the general level of the country, and being, as it were, the broad and horizontal or gently undulating top of an immense mountain. Thus the *Huen-lun* is the highland of India.

Sometimes there are several such, set one upon another, at least on one or two sides, when they are called platforms or terraces, as those on the eastern slope of the Cordillera of New Mexico.

Some writers regard the word *plateau* and *table-land* as merely the French and English names for the same sort of elevation. Humboldt is of opinion that these names should be confined to elevations producing a sensible diminution of temperature, and accordingly to such heights as attain to 1800 or 2400 feet. Some again, as Balbi, give the name of plateau to all high and extensive mountain-tracts.

Generally speaking, the plains of Europe are of middling elevation, the extremes of high and low being principally found in Asia and America. Thus while the great plains of Central Asia, about Ladak, Tibet, and Katchi, and round Koukounour and Gujarat, attain a height similar to those of Quito and Tucacara, or from 9000 to 12,000 feet, the great marshy plains of Siberia along the borders of the Frozen Ocean are very slightly raised above the sea-level, as is also the case with the plains of Bengal at the mouths of the Ganges, the whole of Mesopotamia, the Talanna of Arabia, &c.

In South America, contrasting with the lofty plains of Quito, of Santa Fé de Bogota, &c., are the llanos and pampas of the Orinoco, and in Northern Peru, on the interminable prairies and the low swamps round New Orleans form a striking contrast with the Rocky Mountains and the elevated plains of Mexico.

Of Africa little can be said, but the same reason is to be believed that if the plains of Lower Egypt and part of the Sahara are very low, there may be high plains in the mountainous regions.

Plains differ not only in their elevation, but in the horizontality of their surface and general slope, and in the nature of their soil; which circumstances, together with their geographical position, influence their climate and productions, and give to the most considerable among them a particular character and physiognomy. It may be re-marked that the rocky and sandy plains belong almost exclusively to the hot and temperate regions of the old world.

The plains of America are generally characterised by their luminous covering or their vast fields; the Asiatic steppes by a twofold appearance, being, in some places studded with low saline plains, and in others, as in Southern Russia, Siberia, and Turkistan, covered with plants of the families of the Composite and Leguminosse; while the greater part of the plains of South America are cultivated.

We say such are the general characteristics, for there are plains of similar character and physiognomy in very different and widely separated regions of the world. The high land of the Campos Panches, for instance, in South America, is very similar in physiognomy to the desert of Gobi in Asia. The *Desierto,* near Coquimbo, are of the same character as the Sahara. The *Puszta* of Hungary resemble the savannas of the New World; and the pampas of Cor- dova are not unlike some of the Siberian steppes.
Though, as we have said, plains constitute by far the greater portion of the earth's surface, and are very varied in their appearance, there are nevertheless some which are remarkable not only for their extent, but for the peculiarities which derive, probably in part, from the circumstances attending their original formation, and which no subsequent causes have been able to obliterate. These remarkable plains are known under the names of deserts, sands, dunes, sahaws, steppes, savannas, ilanos, yampas, and selvas (or forest plains) of the Marañón. Deserts having been already described under their particular head, we shall here give a brief account of the others.

Europe.—From Paris to Moscow and Cairo on the one hand, and to Astrakan on the other, is one continued plain, comprising the lowlands of Northern France, the Netherlands, the North of Germany, the whole of Prussia, and the greater part of Poland and Russia, as far as the first terraces of the Ural. Besides which there are many minor plains, as those of Wallachia and Bulgaria, Hungary, Lombardy, &c. The ancient civilization of Europe has covered the greater part of these plains with cultivation and reforested some of these lands the richest in the world (the plains of Lombardy); nevertheless there are some spots which seem to defy all human efforts to bring them into cultivation; such are those between the Lower and Middle Urals, of which the latter specially contains more than one-twelfth of the known grain of the world. It is celebrated in Europe for its extraordinary beauty, and is known, as far as Germany, Sweden, and Norway, as the "Swedish landscape." In the midst of this plain is the island of Sert, in the north of Norway, which contains the famous Aksakal Bari.

To the north of the last-mentioned steppe lies the great plain or steppe of Iskhem, which extends from the eastern border of the basin of the Vistula, where the river joins the Ob, across the Khov and the Tobol, to the Irtysh. It takes its name from the river Iskhem, which, dividing it nearly in two, rises into the Irtysh near Petropavilisk. The north-east part of this steppe towards the Ob, on the left bank of the Irtysh, is covered with dense forest, interspersed with rich pastures, and on the right bank of the Irtysh, the plains of Luneburg and Verden between the Kama and the Ob, and those of the Elbe on the right bank of the Elbe. These plains are at the mouth of the Elbe in the north of Russia, and in the south in the Netherlands, are in great number, but of indifferent quality; besides which there are on the sea, wolves, foxes, ermine, and squirrels, beavers, lynxes, gluttons, and others, and still further north are reindeer. In the districts of the middle and eastern parts, there are in the plains of Iskhem, similar general character to those already described.

Before the Irish, we enter the great steppe of Baraba, occupying all the space between the river and the Ural. These steppe plains are extensive, and contain numerous lakes and pools, particularly in its southern portion. This district is in many places extremely fertile, and along the watercourses there are many celebrated waterfalls. The great difference between the west and east districts is the presence or absence of forests. The former have extensive forests, while the latter are wooded, but the more southern, those lying along the Irtysh and towards the Altai, have few trees, and are less fertile. The lake Tchany, the largest and nearly the most northerly of the great group of lakes, about which the surrounding country is extremely fertile, and abounds in aquatic game, the chief nourishment of the Tartar tribes who live dispersed along the frontiers of this cañon. Interpersed with the sandy, barren, and saline spots, are many places where there is excellent land for tillage, in which grain and flax succeed well. In those parts of this district which suit them there are great quantities of elk, roebocks, and wild boars. The Kirghis of the great steppe occupy a more northerly position, and are more intermingled with the inhabitants of the Altai, the former being divided into several tribes, the last being less and less, the principal of which is the famous Aksakal Bari.

The greater part of what are properly called the steppes form a considerable part of the country known as Independent Tartary, which is inhabited by the nomadic hordes of the Kirghis Cossacks.

The steppes which lie on the north-west of the Caspian, bounded by the Caucasus, the sea of Azof, the lower course of the Don, and thence to the Ural or Irtysh, is inhabited by the Cossacks of the Black Sea and the Noggy Tartars. The whole of this steppe is characterised as composed of hills of a moving shelly sand, between which are beautiful green pastures, and marshy hollows with reeds and clumps of trees, among which are willows, poplars, and wild olive. There are numerous salt streams and brine pools, barren patches covered with the efflorescence of saline plants. The fertility of the hollows seems due to a sheet of water which, coming from the hilly range called Obatchei Sirt, a branch of the Ural, flows immediately below the sandy surface, being probably retained by an impervious substratum.

Between the Irtysh and the Altai, the dry and elevated steppe, is occupied by the Kirghis of the steppes and plains. Here, as in the last-mentioned steppe, the inhabited areas are separated by a wide and almost impervious desert, which may be described as a south-eastern continuation of the Ural, and which extends between the Altai and the Caspian, is another steppes similar in character to that already described. It is occupied by the Kirghis of the little hordes; while what is called the central or middle hordes range over the vast steppes contained between the lake Aral and the Caspian. This great steppe runs from the Caspian on the west, the Ouloustau and Naourgujakas ranges on the north, and the Sarasou on the east. With the exception of the Sir, all the waters of this great basin lose themselves there. On the margins of these steps there is no less salt, the principal of which is the famous Aksakal Bari.
horses, camels, horned cattle, sheep, and goats. These herds, together with the booty taken in their incursions upon the Calmucks and others, form the sole wealth of the Kirghis, who lead easy and independent lives.

The extent of the steppes properly so-called, excluding the sandy plains of the north, may be about 1,000,000 square miles.

**Savannas or Prairies.—**The central part of North America, from the Frozen Ocean to the Gulf of Mexico, may be regarded as one continuous extension, divided along the northern margin into the north-eastern basin, whose waters flow into the Polar Sea, Hudson's Bay, and, by the great lakes and St. Lawrence, into the Atlantic, and the basin of the Missouri and Mississippi, whose waters fall into the Gulf of Mexico.

This immense tract of country, estimated by Humboldt at 2,430,000 square miles, is extremely varied in climate, in character, and productions; for while the northern portion, which is occupied by the Mackenzie, Back's River, the Churchill, and the Saskatchewan, is condemned for the greater part of the year to all the horrors of an iron-bound soil and stunted polar vegetation, palms and other tropical trees grow at the extremity of the southern portion. It is this southern basin, watered by the mighty Missouri and Mississippi, with their abundant affluents, that contains those extensive grass-covered tracts, the savannas and prairies, which extend from the mouth of the Missouri to the north, and though along the Illinois river they are found to the extent of 1,200,000 acres, and also in other parts of the basin east of the Mississippi. But the whole of the territory from the right bank of the Mississippi to the mountains is not one continuous extension to the Canadian and Mexican plains, for it is risen towards the mountains, many of whose spurs are reached by the Missouri, which has eroded their extremities into bluffs. These bluffs form the boundaries of the basins of the great tributary streams, the Platte, the Kansas, the Osage, the Arkansas, etc. Woods are also occasionally met with along the Mississippi and other watercourses, as likewise in Arkansas; and in some places, as between the Platte and Kansas, the scenery resembles that of the Indian moving sands resembling those of the African desert. Elsewhere again, as from the mouth of the Arkansas along the Mississippi, a distance of 450 miles long and 40 miles broad, the soil is all swamps and pools, with abundance of trees: this is also the case above Illinois lake and elsewhere. Along the upper Missouri, from the territory of the Mandans, is an interminable plain without trees or shrubs except in the marshy spots. In various parts, but more especially along the borders of the great plain, and in Arkansas, salt is found.

The savannas, or prairies, as they are also called, are divided by Flint, an American writer, into three kinds:—1. the dry, watered with the Caspian; 2. those with small shrubs, grape-vines, &c., very common in Indiana, Illinois, and Missouri; 3. dry or rolling, generally destitute of water and almost of all vegetation but grass; they are the most common and extensive: the traveller may wander for days in these vast and nearly level plains without wood or water, and see not object rising above the horizon; 3, the alluvial or wet prairies, the smallest division; they are covered with a rich vegetation of tall rank grass. The soil is deep, black, friable, and fertile, and abounding in pools without issue, left by the floodings of the rainy season. It is over the second kind chiefly that the bison wander in herds of from 40,000 to 50,000. Stags, or more properly wapiti, are also numerous. The principal and even more numerous are the antelope abundant in herds of several hundreds. In summer wild goats are seen in vast numbers along the Mississippi. Above the Mandan villages are grizzly bears; and badgers, beavers, otters, foxes, wolves, raccoons, opossums, squirrels, porcupines, and skunks inhabit the same region. To this enumerations the deer and various species of antelopes, bears, and buffaloes may be added. The waters teem with alligators and tortoises, and their surface is covered with millions of migratory water-fowl, which perform their annual voyage between the Canadian lakes and the shores of the Mexican Gulf.

**South America.**—The countries of South America, from the mountains of Caracas on the north to the Straits of Magellan on the south, is divided by comparatively low transverse ridges, running east and west into three great basins; that of the Orinoco on the north, that of the Amazon or Marañon in the centre, and that of the La Plata on the south. The first comprises the llanos, vast plains occupying a surface of 250,000 square miles. They may be subdivided into two principal portions: the first, beginning at the mouth of the Orinoco and extending with its affluents the Andes of New Granada, being bounded on the north by the Caracas, and on the south by the mountainous group of Parime and the Rio Aupre, an affluent of the lower Orinoco. The other portion of the llanos, which is twice as extensive as the first, reaches from the Aupre on the north to the Caquetas (an affluent of the Marañon) on the south; having the Andes on the west, and the sierra of Parime and other mountains on the east. The inclination of the plains is to the east and south, and they are traversed by many streams, which, taking their rise from the eastern slope of the Andes, bear their tributary waters to the Orinoco. As the medium height of the llanos does not exceed 200 feet, the course of the rivers is very slow and often scarcely perceptible.

The chief characteristic of the llanos, says Humboldt, is the absolute want of hills and inequalities, the perfect level of every part of the soil. Often in the space of 570 square miles there is not an eminence of a foot high. This resemblance to the surface of the sea strikes the imagination most powerfully when the plains are altogether destitute of palm-trees, and where the mountains of the shore and of the Orinoco are so distant that they cannot be seen. This uniformity, equalizing equality of surface reigns without interruption from the mouths of the Orinoco to the Villa de Aurore and Ospinos, under a parallel of 540 miles in length, and from San Carlos to the Arequipa, a distance of 400 miles.

There are however, notwithstanding this uniformity of surface, two kinds of inequalities in the llanos. The first, called *brancos,* are horizontal banks of sandstone or lime- stone standing four or five feet higher than the rest of the plain, and sometimes many leagues in length. The second kind of inequality, called *mestas,* consists of convex eminences rising to the height of a few fathoms.

The llanos have many distinguishing parts: thus, from the Mouth of the Dragon, the llanos of Cumanas, of Barcelona, and of Caracas or Venezuela, follow from east to west, when, turning southward from 8° N. lat., between the meridians of 67° 40' and 70° 40', we find the llanos of Varinas, Casuare, the Meta, Guaviaro, Caguan, and Ciqueta. All these are again subdivided.

The aspect of the llanos is somewhat dissimilar in different places; but the greatest difference depends upon the seasons. The local heat and the various species of the palm-trees scattered about, which vary in different places, and also from the greater or less abundance and variety of the dicotyledonous plants which are intermixed with the grasses, cause the llanos to be sometimes very unequal, being sometimes only a few inches at a distance from the watercourses, and rising to a height of four feet in their vicinity. In this high grass the jaguar, or American tiger, lurks to spring upon the mules and horses that cross the plain. But the season of drought or of rain entirely changes the aspect of the greater part of the llanos.

In the rainy season, says Humboldt, the llanos display a beautiful verdure, but in the time of great drought they assume the aspect of a desert. The grass is then reduced to powder, the earth cracks, the alligators and great serpents remain buried in the dried mud, till awakened from their long lethargy by the first showers of spring. These are sometimes very copious, and cause the llanos to be filled with many leagues in length where the llanos are not traversed by rivers.

The principal and almost the only trees of the llanos are different varieties of palms. The *Corysta tectorum,* or Palm of Colombia, solitary or in clusters, are so common here as a landmark through these trackless plains. It is chiefly found in the llanos of Caracas from Mesa de Peja, as far as Guayaval. Further north and north-west, near the border of Peru, the *Pteris platia* takes the place of the *P. tectorum* by another species of the same genus. Other palm-trees appear to the south of Guayaval, especially the *Pirai,* with pinnate leaves, and the *Muricata,* whose beautiful verdure, at the period of the rains, attains a greater degree of luxuriance. The llanos are crossed with the grey and dusty leaves of the *cohiba.* Two or three other species of trees besides palms are also found in the llanos, and it is round these clumps that the llanos are the most fertile.

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The great wealth of the llanos consists in the numerous herds which they feed. The first horned cattle were let loose in these extensive pastures by Cristoval Rodriguez, about the year 1545, since which time they have increased to almost countless numbers. About 98,000 head of cattle are said to have been the pasture of the empire. But, according to M. Depons, there are, from the mouths of the Orinoco to the lake of Maracaibo, 1,200,000 oxen, 180,000 horses, and 90,000 mules, the annual produce of which herds is estimated at about 5,000,000 francs. The richest proprietors are said to own as many as 14,000 head every year, and sell to the number of five or six thousand. According to official documents, prior to the Revolution the exportation of hides from the whole capital-general amounted annually to about 14,000 skins of oxen and 11,000 of goats; and as in this account no mention is made of fraudulent dealings in hides, it would appear that the number of 1,200,000, stated above, is much understated.

All the parts of the llanos are not equally favourable for the breeding of oxen and oxen; but in some of those places, where the herds are less numerous, the pastures are so fertile as to furnish meat of an excellent quality for provisions of the coast.

The horses of the llanos are not very large, but are descended from a fine Spanish breed. Deer are natives of these plains.

The greatest curiosity of the llanos are the gymnoti, or electric eels, which live in the pools as well as in the rivers of this part of South America.

We may also mention, as distinguishing the llanos from the pampas, and from the plains of North America, the Selvas, or forests of Asia, the total absence of any formation of muriate of soda.

Pampas, from an Indian word, which, in the Quichua language, signifies properly a flat, is the name given to extensive plains in the southern and central parts of South America. Those which extend to the south and west of Buenos Ayres are called, the former the Pampas of Buenos Ayres, or simply the Pampas, and the latter the Pampas of Cordova. The plains to the south of the province of Chi奎lo, are called the Pampas de la Patagonia, and those to the north one more to the north, between the river Beni and the river Marmore, a tributary of the Madeira; and lastly, to the north between Huallaga and the Ucanal there is another, called the Pampas de Salado.

The Pampas of Buenos Ayres are bordered on the west by the forests which lie along the base of the Andes of Chili; on the east by the Atlantic; on the south by the Rio Negro and Patagonia, the interior of which, though little known, is said to be covered with the same kind of the same forests; and on the north-east by the Rio de la Plata. In the direction due north the pampas narrows between the Parana and a ridge coming from the Andes, called the Sierra de Cordova.

This region, reckoning to the foot of the mountains on the west, occupies a surface of about 315,000 square miles. This plain has no general slope, or rather it slopes so gently towards the east, that the slightest inequalities, together with the absorbing nature of the soil and the great evaporation, are sufficient to arrest the course of the waters; so that, with the exception of the rivers Colorado and Negro, which come from the Cordilleras, and which traverse the southern part of the pampas, and through the Salado, a small stream, which flows into the Rio de la Plata at its mouth, the pampas have no running waters, but, instead of them, a great many shallow pools, of which the water is often brackish. There is one at about four hundred and fifty miles from Buenos Ayres, in the direction west-south-west, always filled with salt, from which the city of Buenos Ayres was yearly supplied before the port was thrown open to foreigners. The southern part of the pampas is sandy, with short grass, and scanty trees; the northern parts are covered with grass, supplying food to large herds of cattle and wild horses, the descendants of those first introduced by the Spaniards. It is said that several millions, if not of cattle and about half as many burros, feed on the Pampas de Buenos Ayres. There are also wild beasts.

This plain is traversed by a road which leads from Buenos Ayres to Chilia, along which the traveller meets with huts, which form stations, distant from each other about seven or eight leagues. The journey may be made on horseback or in a carriage, it is sometimes dangerous, on account of the Indians.

The Pampa of Cordova extends from the right bank of the lower Parana to the Sierra de Cordova at the west. On the north it joins the sandy plains or travesias of Santiago del Estero.

This pampa resembles that already described in all things, excepting being traversed by a greater number of streams. All these streams however, with the exception of the Rio Salado and the Parana, which empty themselves into the Parana, or end in marshes and lakes without issue, and which in the country are called lagunas. Such is particularly the case with the Rio Dulce, which, rising in a fertile valley on the eastern slope of one of the lateral chains of the Andes, at a height of 7,400 feet above the sea, and which, after emptying itself into the Lagunas de las Porongos; the same is also the case with the Rio Primero, which is situated Cordova, the best of all the towns of Tucuman, the residence of a bishop, and where the Jesuits had formerly a celebrated university.

Throughout the whole of the country between the Parana and the mountains to the west, from Chaco on the north to the extreme southern extremity of the Pampa of Buenos Ayres, says Ayres, there is neither river, lake, nor well that is not brackish. Even the Pilcomayo and the Vermejo partake of this saltiness; and the same author assures us that he has seen in lagunas, dried up by the heat, a layer of Epsom salts, almost three inches in thickness.

The inhabitants of the fertile valleys lying to the west and north of the plains of Tucuman, similar in some respects to Little Bucharis, rich in their flocks, without ambition, and with care, close the day in rural amusements, singing to the sound of the hydraulics. It is nevertheless true that there are spaces of many square leagues in extent condemned to absolute sterility. The traveller may pass for days together over sands and stones, between which there spring up here and there some little plains of sand, with by other objects than a few isolated huts on the borders of some brackish stream; these barren districts are generally designated by the term travesias.

Pampa de Huanacos. — Leaving the Pampa of Cordova on the south, and travelling through forests swarming with bees, which extend beyond the Rio Dulce and the Salado, we enter on the territory of the Abipones, a race of very warlike Indians; after which, crossing the Rio Vermiliones, we gain the plains of the Gran Chaco, occupied by more or less savage indigenous tribes. This region is traversed by the Rio Pilcomayo, which, passing near the mines of Pozo Azul, falls into the Paraguay below the city of Assumption. To the north lies the Pampa de Huanacos, adjoining the province of Chiquitos, bounded on the east by the great laguna of Xarayes, through which passes the frontier of Brazil; on the west by the heights of Santa Cruz de Sierra, and on the south by the forest of the province of Mosox and the sandy plateau called Campos Parexis.

Pampa de Mosox is on the north of the province of Mosox, between the rivers Beni and Marmore; and between the junction of this latter and the Guaporés, another source of the Madeira, are other pampas of considerable extent.

Pampa del Sacramento. — This pampa is situated on the north-west of Cuzco. It differs from the other pampas in having a more tropical vegetation, and in its soil not being calcareous. It occupies a surface of from 54,000 to 63,000 square miles.

Such are the principal pampas of South America; and, if we include a part of Patagonia as being of the same nature as the Pampas, having with it the same kind of plains, and without reckoning the pampas of Mosox and Sacramento, and a number of spots of similar character but less extent, an almost uninterrupted band, extending from the Campos Parexis, in latitude 15° S., to the bay of St. George in 42°, or about 800 geographical miles, and 900 other river, lake, or sea; with this, with miles of plain, partly sand, and partly marshy and saline, and producing hardly anything but pasture and a few stunted trees. Humboldt estimates the whole of the pampas of Rio de la Plata and Patagonia at 135,000 square leagues of 29 to the degree.

The Selvas, or forest-covered plains of the Marañon. — Independent of the vast forests which cover great part of the plains of North America, particularly on the east of the Mississippi, there is the immense plain of the Marañon in South America, extending over a surface of 3,240,000 square
miles, of which about 719,000 are covered with prairie forests, the rest of the space being occupied by the waters, and by open patches of a character similar to the llanos and savannas, though little known. We merely mention this remainder as one of the most extensive continuous plains in the world.

If the great plains we have described owe their peculiar character to climate and situation, a very little reflection will suffice to show the immense influence which they in their turn have had on the Oriental; the climate of the plains being quite different from that of the forests, and the great modifications they must effect on mere astral temperature. Indeed the curves of the isothermal lines sufficiently prove that the several climates of the country differ widely in their characters and intensity. The plains are the very rendering, and the magnitude, distribution, conformation, soil, and productions of the solid parts of the globe, and the extent and relative position of the great bodies of water by which they are surrounded. Nor have the great plains of Asia and America performed a less important part in the moral history of mankind, whether as having favoured or opposed the emigrations of nations and the progress of civilization.

PLAN. This word (which is the same as Plane) means a representation of a plane section of any building, country, &c. Usually it is the horizontal section that the term is applied, the words section or elevation being used to signify the vertical plans. A map is not properly a plan, but a Profile that only will be found in meteors of the first order: nevertheless the term is commonly applied to maps of very small portions of a country, as an estate or a town. Planaries. Captain Brown's name for a genus of fossil shrimps, a part of which are found in New South Wales and the same stretching through France; but the outer lip is reflected; and the form is considered to have been marine. Dr. Lea notes a new species, Planaria filament, from the Californian beds, Alabama. (Contributions to Geology.) Planaria had been used by Müller, Lamarck, and others, to designate a genus of animals placed by Cuvier among his Intestininae Porechyma; but they do not live in other animals, and are only found in fresh or salt water.

Dr. Johnston describes several British species of Planaria, all marine, in the 3rd and 4th vols. of the Zoological Journal.


The Oriental Plane, or Chinar, is a native of Asia Minor and Persia, and its range extends eastward as far as Cashmere. It is the most useful of all the European oaks. It is an excellent timber for buildings, and is esteemed equal to the oak in its qualities. The leaves are large, and the tree is very durable, and will live for a very long time. It is a very beautiful tree, and is highly esteemed for its beauty and durability. It is very hardy, and will thrive in any soil. It is one of the most important timber trees in the world, and is extensively cultivated in Europe and America. It is a very hardy tree, and will thrive in any soil. It is one of the most important timber trees in the world, and is extensively cultivated in Europe and America. It is a very hardy tree, and will thrive in any soil. It is one of the most important timber trees in the world, and is extensively cultivated in Europe and America. It is a very hardy tree, and will thrive in any soil. It is one of the most important timber trees in the world, and is extensively cultivated in Europe and America. It is a very hardy tree, and will thrive in any soil. It is one of the most important timber trees in the world, and is extensively cultivated in Europe and America.

The Occidental Plane is also a tree of very large size and of considerable beauty, although inferior to the Oriental. It is found over a great part of the North American Union, extending even into Canada, but its favourite range is in the moist rich grounds of the banks of the Ohio and in the low lands where it struggles into Mexico. Its leaves are angular rather than fingered, by which it is readily known. In the United States it is called Buttonwood, and sometimes the Cotton-tree. A tree of this species is ascribed to be existed in a small island in the Ohio, which, at five feet from the ground, measured forty feet in circumference. This species is found in Hyde Park, and in other public places near London, and is that usually planted in England, to the climate of which it is however ill suited. The wood is seldom well ripened, and is therefore liable to injury in winter, and it is continually damaged by our spring frosts; the consequence of which is that the trees grow slowly, and, although in appearance, few of their leaves being free from brown and dead portions, unless in very favourable seasons. The multiplication of it ought therefore to be stopped, and that of the tree generally in the whole state, unless some better tree have any regard to the beauty of the effect produced by their operations. A more unsuitable plant for the London parks than the Occidental Plane could hardly be selected.

Both species have the singular property of throwing off their old bark in hard plates of irregular size and form.

PLAN. [Mississippi, River.] PLANET (σφαιρa, a wandering star), PLANETARY THEORY, MOTIONS, PERTURBATIONS, INEQUALITY, &c. The term planet was first applied to one of the distinction between the stars which preserve their places, or seem to do so, and those which have a sensible motion, and, as is now known, about the sun. The etymology would oblige us to include comets,—many of the stars, which have small motions of their own, or proper motions on the celestial sphere—none of those double stars which revolve about each other—and all the satellites which revolve about other planets. As discovery proceeds, it is likely that every body in the universe will be discovered to move. Saturn, for instance, has now been shown to have changed its meaning, and is used to stand for a heavenly body which makes successive revolutions about our sun. It thus includes—the old planets, Mercury, Venus, Mars, Jupiter, and Saturn; which are supposed to move round the moon, the most easily discovered planets of all—the planet of Conicurus and Galilei, on which we live—the new planets, Vesta, Juno, Ceres, Pallas, and Uranus;—three comets certainly, those of Halley, Encke, and Biela, and probably many others.

The plan of this work leaves us little to say upon so general a term as Planet, and that little consists mostly of references, and explanations of isolated points. The order of discovery connected with the planets, and the mathematical and physical considerations which give rise to our power of predicting the motions and places of the planets, apply equally to those of the moon and comets.

By a Planet, astronomy was once meant any hypothesis which serves to explain the motions of a planet, as actually perceived. Thus there was one theory of Mercury, another of Venus, &c., each (without connection with the rest) expounding the nature and magnitude of all the motions which might be observed in the simple circular motion round the sun, in order to enable the theorist to predict the planet's place at any given future time. At present, by the theory of a planet means the deduction of its motion from the theory of gravitation. Given the places of all the bodies of the solar system at any one moment, together with their velocities and the directions of their motions, the assumptions of the theory of gravitation are found sufficient to deduce tables which will at least be a reasonable approximation to the accuracy which the predictions can be made; for an instance, see Moon. When tables are constructed with such fundamental data only, they are called theoretical: but if some of those details which have been deduced from observation have been added, they are called empirical. For the treatment of the theory of gravitation as a question of physics, see Attraction: for the deduction of the theory of the main inequalities of the planetary motions, and most points connected with the detailed results of that theory, see Gravitation: for the results which are particularly connected with the secular inequalities, and the reasons which we have to infer the permanence of the whole system, unless some new and external cause, see Solar System. See also the general considerations under the word Theory.

The Planetary Theory, it must be remembered, in the sense in which we are now using the word, refers only to the motions of the planets round the sun. A spectator situated on the last-named body would find it sufficient to
predict the place among the stars, of every planet at every time: or a terrestrial astronomer might assign by it the places of the planets as seen from the sun, which are called heliocentric places. But our own circumstances, as being outside the apparent planetary motions to vary most materially from the real ones, and the geocentric places (or places as seen from the earth) to differ literally from those of the heliocentric places, and from the sun west to east, always: as seen from the earth, it sometimes moves from east to west. As to this point, the circumstances of our day are, in regard to the astronomical education of the public, as complete as the whole observations of those who preceded the time of Newton. Formerly, the apparent motions were well known to those who knew anything; the real motions were matter of dispute: now, every well educated boy of fourteen has a very good notion of the real motions of the sun, and other stars, except those of which there was no possibility of calculating the time of motion. To explain these motions here would require us to introduce the contents of another article; the whole of what is necessary on this point will be found in TROCHONDAL CURVES, the preliminary considerations being found under Motion.

The places of the principal planets are usually given in the almanacs, at intervals of several days, in a manner which is sufficient to find them in the heavens. In the "Great Planetary Table," as it is now to be found a Greenwithian ephemeris of every planet for every day in the year, in which the places are predicted to the smallest quantities, so that the reduced observation of any one day affords an immediate verification of the theoretical tables with the facts.

**PLANETARIUM.** [Observe].

**PLANIPENNES,** one of the sections of insects into which Latreille divides the order Neuroptera. The species of this section have the antennae composed of numerous joints, always larger than the head; the mandibles are well developed, and the posterior wings are nearly equal in size to the superior; they are either naturally extended or have the anterior portion simply folded beneath; the reticulations of the wings are very distinct, and they are naked; the maxillary palpi are usually filiform, or slightly thickened at the apex, shorter than the head, and four-jointed.

This section is divided into four families:

1st. The *Panorpidae,* the species of which are distinguished by all the tarsi being five-jointed, and the anterior portion of the head drawn out in the form of a snout or proboscis.

It consists chiefly of the Linnaean genus *Panorpa,* which is now divided into the following genera—*Nemoptera,* *Latreilleg*; **Batucus, Lat.;** *Panorpa proper,* and *Boreus, Lat.*

The *Panorpidae* consists of *Linnaeus,* a common insect in hedges and woods. It is a three-quarter of an inch long, the snout is orange, and the abdomen red; the elytra are irregularly spotted with black.

Of the genus *Boreus* we also have an example in this country; the *B. hyamae,* a small insect, which is found under the stones among the stones where the winders are.

2nd. The *Myrmeleontidae.* In this family the antennae are more or less suddenly incrassated at the apex; the head is transverse, and the eyes project considerably; there are six palpi, of which the labial are usually the longest and thickened at the apex; the first segment of the thorax is small; the anterior and posterior wings are equal, elongated, and, when closed, meet at an angle like the roof of a house; the abdomen is usually elongated, and furnished with the male sex and the appendages; the legs are short. These insects are found in the warner portions both of the Old and New World: they form two genera according to Fabricius, *Myrmeleon* and *Ascalaphus.*

The curious habits of the larva of the *Myrmeleon Formicarium,* a European insect, though not found in this country, have often attracted the attention of the naturalist. This insect is of a greyish-colored, and short and broad form; the head is small, and furnished with a large pair of sharp pointed mandibles, with which serve both to capture and to extract the juices upon which it lives. The number of ants destroyed by this larva has obtained for it the name of Ant-lion. Although provided with six feet, says Latreilie, it moves not at all sideways. This does not being to seize its prey by the celerity of its motions, it has recourse to stratagem, and lays a trap for it in the form of a funnel-shaped cavity which it excavates in the ground, at the foot of a tree, old walls, or in a bank ex- posed to the south. Having completed this cavity, it hides itself at the base, in the mound or sand, and waits until some insect is precipitated into it; if the insect endea- vours to escape, it is overpowered by the current which the Ant-lion showers a quantity of sand upon the victim by means of its head and mandibles, and thus succeeds in overwhelming it and bringing it within reach of its mandibles. Having sucked the juices from the carcase, the remains are thrown out of the mound by the Ant-lion, and about to pass into the punda state, the Ant-lion encloses itself in a white silken cocoon, mixing grains of sand with the outer surface. The perfect insect is about one inch in length; the head and thorax, which are transparent, and have black nerves spotted with white; some dusky spots and one whitish spot are observable near their extremity.

The third family consists of the *Hem erotobidae,* which are chiefly found on the last group by their filiform antennae; they moreover differ in having only four palpi in some (the genus *Hem erotobus,* the wings when closed meet at an angle, as in the Myrmeleons, whilst in others (Seims) they are horizontal.

*Hem erotobus perla* is common in our gardens, and is often seen flying about the lilies, especially towards the evening. It is rather more than half an inch in length, of a green colour, and has transparent wings with numerous green lines arranged in vertical rows. The mandibles are white within, and red without, and are either carnivorous or gnawers in all their states.

The *Mantis,* which Latreille places in this division, differ much from other insects of the order in having large anterior legs formed like those of the Mantid; their tarsi have never more than four joints; the mandibles are strong, and the wings have no folds; the inferior pair are either smaller or equal to the superior-wings in size.

Besides the above, this family includes *Rapbidia, Termeis,* and *Pocus.*

The last family of the Planipenxes is the *Perilidae,* in which the tarsi are three-jointed, and the mandibles almost always small and partly membranous; the inferior wings are wider than the others, and are folded when not in use. This family contains the genera *Perla* and *Neumora.* The larva of the *Perla* lives in the water, and inhabit sheaths which they construct by joining together various substances by means of a silken web which they spin.

**PLANISPHERE.** This term originally stood for any representation of all or part of the sphere on a plane; it is now out of use, at least in that sense. It has partially however been transplanted to all of the portion of the sphere (meaning should become fixed and general) to signify any contrivance in which plane surfaces moving on one another fulfill any of the uses of a celestial globe.

The instrument* which we proceed to describe is one which, at or near a given latitude, is, for ordinary uses, that is, for finding the position of the heavens at any one moment, much more easily used than the celestial globe, and very much less expensive. A circular disk of pasteboard, on the stars visible in our latitude are laid down, turns on a second disk, round which are the days of the year on one circle, and the hours of the day on another. A third and hollow disk turns upon the same pivot, the hollow disk being divided into minutes; the outer portion of this shows is precisely that which is visible at one time in the latitude of the instrument: the points of the compass are marked round the rim of the hollow disk, or of the horizon. The effect is, that by setting the disk which contains the stars to the north, and the hours of the day, the part of the heavens visible at that day and hour is distinctly shown. The time at which any star rises, culminates, and sets can be immediately found within a minute. I strongly recommend this instrument to those who study the face of the heavens, as being much superior to the globe.

**PLANORMS.** [Linneaus, vol. xiii., p. 498.]

*These planispheres are very well manufactured by Messrs. Smith and Bird, at 12s., and more. We mention this, because we have seen them very erroneous: we remember one in which the equalizer cut the horizon a great way from the east and west points.*


PLANTAGENET. [HENRY I., II.]

PLANTAGINACEÆ are a small natural order of plants belonging to the monopetalous exogenous series, principally characterised by having a superior one-celled simple ovary, terminated by a simple linear stigma, many seeds, with a minute embryo in the midst of much albumen, and stamens with extremely weak filaments. They consist of herbaceous or suffrutescent plants, of which the common Ribgrass, or Plantago lanceolata, may be taken as the type, and are of no material importance to man. The mucilage surrounding the seeds of some of them is occasionally used in the stiffening of muslins by the manufacturers, and the P. lanceolata is sown on sandy bad lands as a material for sheep food. In structure Plantago possesses the rare peculiarity of having the cavity of its simple carpel divided into two by a vertical additional plate.

PLANTATIONS. [FORAMINIFERA, vol. x., p. 349.]

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PLANTING.

1. Plantaago major.
2. A flower; 3, a corolla cut open; 4, a seed-vessel, with the upper half of the peris removed.

PLANTIGRADA. [CARNIVORA, vol. vi., p. 307.] The genera placed by Cuvier in this tribe are Ursus [Bear], Procyon (Raccoons), Allurus [Panda], the Benurongos (L. etide, Valenci), the Coatis (Nasu, Storr). (Here, he thinks, can hardly be placed the Chindzou, or Petos, Cuv. [Cercoleptes, Ill.], which join to plantigrade motion a long and prehensile tail, like that of the Supajous, a short muzzle, a slender and extensible tongue, two pointed molar teeth in front, and three tubercular molars backwards.) Meles, Storr [Badger; Meles], Gulo, Storr [Gulo], and the Ratelle (Viverra melviora, Sparr. ; Fin. Capensis, Schreb.), which have one false molar less in each jaw than the Grison, and their tubercular molar above but little developed, so that they approach the Cats in their teeth, whilst their external form is that of the Grison and the Badger; the legs being low, and the feet plantigrade, with five toes on each foot, armed with very strong claws, &c. (Régne Anim.)

PLANTING and PLANTATIONS. Planting is the operation of placing in the soil the roots of a plant which has been previously removed; and the preservation of the roots is the first thing to be attended to. It should be kept in mind that the spongioles, or delicate extremities of the fibres, are the parts by which the chief supply of food from the earth is absorbed by the plant. Their tissue being tender and almost naked, they are very susceptible of injuries from mechanical action; and being adapted for performing their functions in a humid medium, they readily suffer from being kept for any length of time exposed to free air and drought. In taking up the plants therefore, the roots should be loosened in such a manner as to receive the least possible violence in the operation. Plants in pots can be shifted from one place to another without exhibiting symptoms of deranged functions; and if it were possible to preserve the spongioles of a large tree entirely as those of a plant in a pot, the same successful results would follow. But as it is next to impossible to do this, we can only attempt to preserve them as far as circumstances will permit. If the tree be large, a trench should be opened beyond the extremities of the roots, of sufficient width and depth to allow the process of undermining to be freely carried on. The roots should be gradually set at liberty by a round-pronged fork, the prongs tapering so as to be easily inserted, and so not by any means to be forced. If the fork is being used, the soil from among the roots will fall into the open trench, but as it accumulates there it must be cleared away, and at the same time the portion of roots set at liberty will require to be slightly tied together with pieces of matting, as the roots so exposed, supported by temporary stakes, or held to one side by an assistant, whilst the planter proceeds in liberating others. If there be, as is frequently the case, a tap-root extending to a much greater depth than the other roots, and if the latter have been carefully preserved during the operation, the tap-root may be dispensed with, for it could only be raised in a mutilated state, owing to the great solidity of the earth at such a depth.

Although it is very desirable to preserve the greatest possible quantity of sound roots, yet all that are bruised or lacerated should be cleanly amputated up to the sound parts. Cross-roots are apt to gall the others when they become large, and therefore the sooner they are removed the better. When the plants are young and in the course of being occasionally removed in a nursey state, all irregularities in the roots should be corrected, which can then be done with comparatively little injury, as the roots of young plants bear a greater proportion to the top than seems to be the case at a more advanced period of growth, and the loss of any of them is consequently felt less. In the early stage of rearing trees, while the proportion of roots predominates, it may be more advisable to divide them to shorten not only the tap-root, as above mentioned, but judiciously some of the other strong roots, in order that subdivisions of a more fibrous nature may be produced, and a number of root-stubs substituted for large root-branches. Even in the case of large trees this principle has been acted upon for centuries, and latterly it has been strongly advocated and put in practice for the purpose of producing immediate effect in park or landscape scenery. A trench is cut out round the tree, and the roots shortened wherever they happen to traverse this trench, so as to leave it quite clear. This being done, the trench is filled up, either with its own excavated soil, or, in very particular cases, with fresh soil. The tree has still a sufficient number of undisturbed roots to keep it alive; and fact it ought rather to be helped to be alive, but as many roots should be left as will ensure its continuing in a healthy though not a vigorous state of growth. In the course of a year or two after this operation it has been performed, the number of fibres can be protruded from the various amputations into the loosened soil of the trench; and partly from the possibility of preserving these roots, and partly from the top becoming habituated to a more limited supply of food, the tree feels comparatively little the change consequent on transplantation.

Roots may be produced of a proper description for planting by the adoption of such measures as the above, and if care be taken, they will suffer little from the operation of removal. Still they may be seriously injured from exposure to air, and more especially to drying winds, frost, and even to wet. To be covered in the soil is the natural condition of the roots of most vegetable productions, and therefore every endeavour should be made to place them in such a condition with the least possible delay; or at all events, if circumstances render delay unavoidable, such means should be adopted as will keep them in a state of firmness similar to that which they have in the soil. It is however necessary to observe, that when the tops are closely packed up and evaporation from them prevented, the roots should be kept rather dry than otherwise, for under such circumstances damp is found to be much more frequently destructive than a little dryness.

Though the preparatory steps to planting, as regards roots and their preservation, may be properly taken, yet, if the operation be not performed at the proper season, success wil,
not be complete. It is true that instances may be adduced of planting being done at the very opposite season to that which is here recommended as the best; but such cases are only examples of what may be described as extraordinary circumstances, arising from unusual weather; so as to imitate more natural circumstances. It is a well known fact that plants are subject to a process of evaporation from all the parts which are exposed to the atmosphere, provided the latter is not in a state of actual saturation. The rate of this evaporation is supplied by the moisture of the soil, and the roots are the media by which it is collected and transmitted to the stem, branches, and leaves. If the expenditure be greater than the supply of moisture which will begin such a process; if the disaster be great and continued, a degree of desiccation will be occasioned sufficient to deprive the vegetable tissue of that moisture which constitutes the medium of intercommunication between the different cells; organization is destroyed; the chain which connected it with vitality is broken, and incapable of being reunited by any mechanical means.

A much greater amount of evaporation takes place from a given surface in some species than in others; but the amount as regards plants of the same species, all other circumstances being the same, is in proportion to the extent of surface which the respective individuals possess. The leaves of a lime-tree may have a surface equal to thirty times that of a broad-leaved branched shrub, and consequently the demand on the roots for the supply of evaporation will be thirty times greater when in leaf than when the branches are naked. Instances might be adduced of the greatest differences in this respect, but if, on the contrary, it was found considerably less, still there would be sufficient evidence of the improbity of moving plants when in leaf: and it may be here remarked, that young leaves admit of the fluids being more rapidly evaporated than old ones do.

The month of December is that in which the condition of the air with regard to moisture approaches nearest to that of complete saturation, and next in this respect is January, which is the coldest month. It is concluded that these months are the best for planting, more especially as they are the most opposite in character to June and July, which, from their being the hottest and driest, are found to be the worst. But November is also moist; and although the temperature of the season has not then reached its minimum, yet the foliage, accustomed to exercise its functions under a summer heat, can no longer perform them under a reduction of temperature, which, though small, is comparatively low as regards summer productions. The leaves in consequence lose their connection with the roots; the earth still retains considerable warmth; and although the absence of leaves in deciduous trees is compensated by the greater openness of the branches, and prevents the formation of with, except in the most limited degree, yet the buds, whilst they are themselves increased in volume, maintain a corresponding action in the roots, sufficient in many instances to form fresh roots, a point which is favoured by the soil being warmer than the atmosphere. Should circumstances occur to prevent the actual protrusion of cellular substance in the form of spongious, still an accumulation of it will be taking place, ready to burst forth in spring. On this account therefore, although December, January, and February are sufficiently moist, yet November, or as soon as the leaves have fallen, is the preferable season for planting. There may be some exceptions from the case of very young trees, if not firmly rooted, are liable to be thrown out during winter, owing to which spring planting would be more proper. But under ordinary circumstances all deciduous trees will succeed best at the period above indicated. Such species as push forth their buds early ought certainly to be planted in autumn. Many of the Coniferous tribe will succeed well if planted soon after they have made their summer's growth: the earth is then warm, and the plants make roots more rapidly. If the beds be not prepared in time, the plants may be set in the beds, and then the root of any trees require to be planted either before winter, so as to have sufficient time to strike root, or immediately before their buds begin to burst in the spring. These species of trees are injuriously affected by exposure to dry cold weather, even when their roots are undisturbed by removal; but if planted at a season when several months must elapse before any perfect action can commence, the tops are apt to become dried up in the interval. It appears that if their juices become inspissated to a certain extent, they never again become liquified, probably owing to their resinous nature.

The watering of newly planted trees ought to be attended to. The supply in the first instance should be copious, in order to wash the earth into the cavities among the roots. Some err in keeping the roots of newly planted trees constantly soaked with water, as if they were those of bog or swamp plants; this is a great mistake. The water supply will then be insufficient to moisten the earth and roots, or, at best, only insufficiently. In all such cases, it must be used with discretion, and at a time when shoots and leaves are abundantly produced. When watering is performed, it should be done thoroughly, so as to reach the lowest portions of the root. In the case of plants being much dried from long carriage or other causes, the supply at first planting may be very moderate. The tops however should be frequently syringed, in order to moisten the bark and prevent its absorbing the organisable matter which descends towards the root by the inner bark. The flow of sap becomes very weak under such circumstances; but if it can be preserved from the effects of drought till it reach the extremities of the root, the formation of fresh spigoloes will immediately commence, and the tree may then be pronounced out of danger.

The nature of the root which a tree takes may be reduced to one general principle, that of placing the roots in the soil so as to imitate as closely as possible the position which they occupy when growing wild and uncontrolled. Plants which have their roots exposed to view are always observed in one situation penetrating to the depth of four or five feet; or in another, creeping along the surface, amongst stones, or into the crevices of rocks, with scarcely soil to cover them, as for example in the vine. But although roots can easily accommodate themselves to that position which the nature of the situation renders it alone possible for them to occupy, yet there can be no doubt that in all cases the extremities of the roots should be lower than where they diverge from the rule which, however self-evident it may be, is frequently violated in practice by making a basin-shaped hole, deepest in the middle, in which the roots are either doubled or have their extremities tending upwards on the sloping sides of the cavity.

The excavation for the reception of the roots of a plant should be considerably larger than those roots will traverse when extended at the time of planting. It should be wide at bottom as at top. The bottom should be more or less concave, the concave part is thus made use of in keeping the roots being covered to the extent observed in undisturbed seedling plants of the same species; that is to say, the upper part of the root should only be just covered. The lower part of the roots should be seen when the soil is removed, and carefully strewed with some of the finer portion of soil, over which the other roots may be spread. More soil should then be carefully rather than forcibly introduced. The place being left perfectly dry, after those of half an hour the description that they will be restily filled up by the finer particles of earth washed down by a plentiful watering. This watering should be given when the soil is nearly all filled in; and after the water has subsided so as not to stand above the surface, the last should be covered with the remaining portion of soil. Except in very loose or light soils, this method will supersede the necessity of the hard beating and treading in to which the roots of trees are subjected by an otherwise very general rule which, however ever being laid aside by many, from a conviction of its injurious effects. It is also necessary to remark that a plant should be placed, before the introduction of the soil, exactly as it is intended it should stand; and it should not be pulled from side to side for the purpose of shaking up earth amongst the roots. If the tree be drawn to one side, the fibres of the root will also be drawn towards the same side; but they are of course too flexible to force their way back again, unless some particular precaution be taken, and they must therefore become more or less doubled. Nor should the soil be thrown against the fibres whilst the roots are being covered; it should be made fine, and either shaken from the spade while being introduced, or else dropped in a fine rain or misted over by a force impelling it in the direction of the fibres, which will be in general from the stem towards the extremities, or from the centre to the circumference.

The principles here stated are applicable to the planting
Hickory, Carya alba, similar soil to that required by the preceding.

Acacia, or locust-trees, Robinia pseud-acacia, sandy loam; a sheltered situation; cannot bear storms.

Birch, Betula alba, forms best timber on dry sandy or gravelly soil.

Laburnum, Cytisus alpinus, any soil not too wet.

Whitebeam, Pyrus spinosa, any good soil, with a pervious subsoil; dislikes wet clay.

Lime, Tilia europaea, soft deep loam, in low rather moist situations.

Horse-Chestnut, Aesculus hippocastanum, deep loam; not in exposed situations.

Poplar, Populus alba, P. canescens, P. nigra, P. tremula, P. fagifolia, P. Gryce, P. montiferas. These thrive in the most any soil, but best in that which is deep and rather moist.

Mountain-Ash, P. usquebaria, any soil, wet clay excepted; adapted for high situations.

Alder, Alnus glutinosa, moist or even swampy soil.

Willow, Salix, of numerous species. Some thrive in rather dry soil, but all prefer moist.

Pine, Pinus sylvestris, P. Laricio, P. Pinaster, P. Strobus. The two first are adapted for thin, rocky, gravelly soils; they grow very vigorously; and if some time be lost and expense incurred by using it instead of smaller and more expeditious, but at the same more cramping implements as regards the roots, the difference will certainly be ultimately in favour of a proper diagonal planting. The last species, however, is very important, as it constitutes the principal species of mountains, but better in mountain glens; they dislike stiff clay and deep strong loam, and, like all coniferous plants, they do not thrive on chalk. P. Pinaster and P. Strobus require a less exposed situation than the other two.

Spruce, Abies alba, A. rubra. A. nigra, does well in moist soil, in low situations; dislikes thin sandy soil and exposure.

Larch, Abies Laricio, adapted for a thin mountain land, or for any soil which will not retain water; excellent for the usual red-sandstone or chalk, as above mentioned.

Cedar of Lebanon, Abies Cedrus, any tolerably good soil, rather deeper than for the larch, but a pervious subsoil, free from stagnant water.

Too close planting produces weak drawn-up timber, in consequence of the tops only receiving a due share of light. It is true that the most magnificent trees are found in those antient forests that have never been sown, planted, or thinned by the hand of man. But at the same time it will not be denied, that wherever natural forests exist, the soil and situation must be exceedingly favourable for the species produced; and that although thousands sprung up more than could possibly find room to attain perfection, yet those only that were the most favourably circumstanced and most vigorous would continue; and when once their tops got completely above those of the general mass, the latter must have inevitably fallen into decay. There is no reason to suppose that the wind would have been the same, and the ground, and, favoured by propitious soil, became lofty specimems, would not have been benefited by the assistance of the axe to relieve them sooner from their rivals.

If, on the contrary, trees are planted at too great a distance from each other, they are inclined to ramify into large limbs and spreading tops, with a stem short but much thicker than where the space admits of less expansion of foliage. If therefore very thick timber of no great length be required, wide of mixing is proper; but if tall timber be the object, the plantation must be moderately thick.

The care which plantations require from year to year consists in making up deficiencies, thining, and pruning. Deficiencies seldom occur if the planting be at first duly performed; and every endeavour should be used to prevent the necessity of making up. This is always done with considerable disadvantage to the plants thus introduced, unless the spaces be thinned; but in that case, the species of tree being proper, the plants may do well in consequence of the shelter afforded by the older surrounding individuals.

Thinning should be commenced in due time. No branch of the temporary trees should by any means overhang the top or even branches of those that are permanent. The shelter on the most exposed sides of the plantation should be formed of robust, vigorous, growing kinds, and it should be allowed to remain without thining. But when neglected till they have formed a dense thicket, must be thinned gradually; for if thinned at once, those left would be injured by the sudden exposure, and would be blown over by winds.

Pruning is an important operation in the manage-
ment of plantations, but it is often improperly practised, tised for want of the knowledge of a few physiological facts, which are essentially necessary for correct pruning, before any rule can be for the purpose of guarding cut branches.

Stems of young wood. It then enters the leaves, when it is exposed to the influence of light. Having in consequence undergone an elaboration, it descends on the outside of the albumen, that is to say through the stem, the deposition at the visible surface of the latter possessing a great degree of lubricity, whereby the passage of a portion of the juices at least is facilitated to the roots; whilst part is retained and becomes organised, by the action of the medullary rays, which give to the wood a certain strength and quality. The modulus of the latter is so variable in different species; but in the same species, all other circumstances being the same, it is in proportion to the surface of the leaves. The aggregate horizontal growth, or in other words the diometrical extension of the stem, branch, and even roots, depends upon the quantity of healthy foliage. The diametrical increase of any particular part corresponds with the nearer or less proportion of foliage above that part. An example may be stated that if one tree has a clear stem of 20 feet in length, and another has one of 40 feet, the roots and foliage of both being equal, the layer of new wood will be much thinner in the latter case than in the former; for the deposition of woody matter is not sufficient to extend upon the surface of the outer bark. The case may be even more remarkable, that in general, if a tree be cut entirely to nature, it will ultimately produce a greater bulk of wood, taking stems and branches together, than would be the case if subjected to pruning. Hence pruning for the purpose of increasing the growth or pruning more or less necessary. The value of a timber tree depends chiefly on the stem, the branch timber being of less value. The object to be kept in view in pruning for timber is the production of a clean strong stem with as small a proportion of branches as possible. But it has been explained that the growth of the stem depends on the quantity of foliage, and without branches a sufficient quantity of foliage cannot be maintained. Whilst, on the other hand, an undue preponderance of branches is prevented by pruning, yet, on the other, as much foliage should be preserved as circumstances will permit.

An excessive privation of foliage should never be occasioned at any one time. It is therefore advisable that pruning should be commenced early, in order, as it were, to repress irregularities in the bud. At all events, whenever an irregularity can be clearly distinguished as such, it should be checked. Thus, when a shoot, occupying the position of a branch shoot, is of great length, the top, or leading shoot, and is allowed to go on for years, the stem will have a forked character; or if the competing portion be amputated after it has acquired a large size, the timber will be much inferior. It is not to be supposed that the branches of these trees should be cut close to the stem at once, in pruning; or whether they should first be snagged, that is, cut at some distance from the stem, and either allowed so to remain or be afterwards cut close. This practice is in every way advantageous, if in the natural annual rate of growth some resinous substance is occasioned, and the blemish soonest overgrown. With the view of preventing the former, the branch may be shortened only to the first live twigs, so as almost to nullify its connection with the stem, preparatory to its final and close removal in the following season.

By choosing the proper season, and by previous shortening, large limbs of any healthy tree may be closely amputated so as to heal over without affecting the tree generally, or even the portion of stem more immediately connected with the limb to any material extent; yet the new layer of wood will prove, on cutting up the timber, to be only in close contact with the surface of the wound, which will remain dead, and which will not enter into the composition of the better growth, but will coalesce. A piece of unsound wood is thus embodied. In this case it would be advisable to shorten the limb to such of its lateral branches as will just be sufficient to keep it alive till the limb is properly cut, or to cut away the portion of the branch on which the limb has grown, and push vigorously means must be adopted to keep it always in a reduced state, by merely allowing as much foliage as will keep the branch alive, without affording any material addition to its diameter.

The proper season for felling trees is when the sap is most at rest. The operation ought not to be performed at any other time, unless for fire-wood. The quantity of sap that may be drawn from some trees is very great. This sap contains the elements of fermentation, the volatile effects of which are evident even on the strong flow of the
oak. Softer woods, although very tough if cut at the proper season, have been observed to crumble to powder in a year or two, in consequence of having been cut when in sap.

With reference to this subject, Miller in his 'Gardener's Dictionary' (1768), has the following remark: 'Before I quit this subject, I must beg leave to take notice of another genus of wood, which is called tannicum, &c. and which deserves to be noticed; it is a tree, whereby people are obliged to cut down their timber at this season. But by so doing the timber is not half so durable as that which is fallen in the winter, so that those trees are more sought than those which have been decayed more in seven or eight years than others which were built with timber cut in winter have done in twenty or thirty; and this our neighbours the French have experienced, and therefore have wisely ordered that the bark should be taken off the trees standing, at the proper time, but the trees left till the next and sometimes until the second winter before they are cut down; and the timber of these is found to be more durable and better for use than that which is cut under any other circumstances.'

It may be observed, that at the time Miller wrote, the celebrated oak, turned to account for tanning purposes, was the general use of France, and had been most probably the means of pointing out the evil, and proposing the remedy above referred to. This plan of barking in the spring and falling in the succeeding autumn is however by no means objectionable; it was sent on an embassy for the purpose, and may, with us, be falling down in autumn or very early in winter without previous disbanding.

(Sang's Planter's Calendar; Loudon's Arboretum Britannicum; Encyclopaedia of Gardening.)

PLANEUS, MAXIMUS, a Byzantine monk, born, as he himself in one of his works says, at Nicomedia. The time of his birth is unknown, and almost the only circumstance of his life which is beyond doubt is that in the year 1327 he was sent on an embassy for the purpose, and may, with us, be falling down in autumn or very early in winter without previous disbanding.

There are no MSS. of this collection of fables, one of which is in the king's library at Paris.

[\text{\textit{\textbf{Plautus} also made a translation of the \textit{Metamorphoses} of Ovid into Greek prose, which is attributed by Dio\-\textit{mosos}; also a Greek translation of Caesar's \textit{Gallic War}, which was printed by Jungermann in his edition of Caesar, Frankf., 1666; but it is a disputed point whether this is the translation of Plauntus. Most of his other translations, such as that of \textit{Sallust} and \textit{Sallustius}, and particularly of \textit{The Dream of Scipio}, as well as his numerous original works, partly on theological, partly on scientific, and partly on grammatical and rhetorical subjects, have never been thought worthy of publication, and have been lost. His literary character on the whole is low; he wished perseverance and honesty, and was guilty of several forgeries, especially in his \textit{Anthology}, his Life of \textit{Aesop}, and the collection of the African and Egyptian Fables.}

PLANULA\'C\'EA, M. de Blainville's name for his second family of the Cellulacea, Bl. containing the genera \textit{Renu\-\textit{tina} and Penerol}i. \textit{[Foraminifera, vol. x., pp. 347, 348.]}

PLANULA\'RIA, D'Orbigny's name for a genus of microscopic \textit{Foraminifera}. \textit{[Foraminifera, vol. x., p. 347.]}

PLANULIT\'ES, Lam. (Discorbits or Dissorbits of the same author) and microscopic \textit{Foraminifera}. \textit{[Foraminifera, vol. x., p. 348.]}

PLASTIC CLAY. The lower part of the Tertiary series of England and France yields, with green-sands and pebbles, beds of clay, which is generally richer in mottled and clayey marl; besides, it is the same clay that has received the name of plastic-clay formation, but, by a large view of its geological and zoological charac-

ters, it may be ranked in the same group as the London clay, and that the Oxford Clay is a continuation of the same formation.

PLATA, RIO DE LA, is a large river in South America, or rather this term is only applied to the wide estuary formed by the confluence of the rivers Parâna and Uruguay. Where this river enters the sea, opposite Mounts Viede.

His character is extremely irregular and strong, a circumstance easily accounted for, when it is considered that the larger of the two tributaries, the Parâna, rises within the tropics and during the rainy season brings down an immense volume of water, and that the wide expanse of the estuary, being bounded either by low and level land on land on land, and by the elevated ground, is subject to be influenced by every strong wind which drives a great volume of water to the point of the compass opposite to that from which it blows. The effect produced in this respect by the pampers, or south-western gales, which frequently blow with inconceivable fury, is very great. Singular fluctuations in the depth of the water occur before and after these pampers. For some days before the pampers come they are lower and more usual when the south-west wind begins; but after a few days the water falls rapidly, and vessels are left aground. In-

stances are known of the upper part of the estuary, opposite Buenos Ayres, having been so much affected by strong winds that the vessels are thrown out of their bed for several miles into its bed to places where ships usually anchor: accordingly, it is not unusual for the water to fall in the outer

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road of Buenos Ayres, in less than twelve hours, from six to two fatihions in places where the usual depth is four fathoms. All routes must render the navigation of this estuary extremely difficult and dangerous, and hence it is called El Inferno de los Marineros; but, Captain Fitzroy enumerates its redeeming qualities also in having anchoring-ground everywhere, and the indications are certain if the vessel is approaching danger, as the bottom is hard on and near the banks, while in the deeper water it is very soft. Little or no tide has hitherto noticed in this wide expanse of water. It is thought that this coast is not so truly the shallows as may be more apparent than real; for where the depth of water is so fluctuating and the currents so variable, it is difficult to distinguish the precise effect of tides, except by a series of observations far longer than this work permits.

Thus the estuary the commercial produce of about one-fourth of South America is brought to the market of the world. It is therefore a great advantage to the countries from which the mouth of the Plata receives its waters, that the rivers which flow into it offer less obstruction to navigation than is usual in large streams. The largest of these rivers, the Paraná, is navigable for vessels of 300 tons as far as the island of Apié, situated between the state of Corrientes and the Argentine Republic, a distance of about 750 miles from its mouth. The Rio Paraguay, the largest affluent of the Paraná, may be navigated by large boats nearly to its source, at least to 18° N. lat., which is 400 miles and more from the mouth of the Paraná, in a straight line, and perhaps not less than 1,200 miles measured along the bends of the river. The Rio Pilcomayo is too shallow for navigation, but the Rio Vermejo, another affluent of the Paraguay, navigable from its mouth upwards to the confluence of its two principal branches, the Lasavayen and the Rio de Tarjía below Orán, a distance of more than 400 miles above its confluence with the Paraguay. The Salado, which joins the Paraná in its lower course, is navigable to the town of Matanza, which is at least 350 miles from the mouth of the river. The Uruguay, another large river which falls into the La Plata, is less suitable to navigation, as two cutoffs occur about 180 miles above the river, which cannot be passed, except when the water is at its highest level.

(Surveying Voyages of the Adventure and Beagle; Parish's Buenos Ayres, and the Provinces of the Río de la Plata; and Ignacio Núñez, Account of the United Provinces of the Río de la Plata.)

PLATA, LA. The Provinces of the Río de la Plata, also called the Argentine Republic (Republica Argentina), comprehend a large part of the surface of South America. The river Uruguay, or Rio Negro, has not been fastned upon their southern boundary: the mouth of this river is near 41° S. lat. On the north, where the republic borders on Bolivia, the parallel of 22° S. lat. chiefly constitutes the boundary-line. The country extends from 41° to 25° S. lat., a distance of 1,320 miles nearly of level elevation in a straight line. On the west, the highest part of the Andes divides it from Chile and the Bolivian province of Atacama; and on the east it is separated from Paraguay by the course of the Rio Paraguay, and from Brazil and Banda Oriental (Uraguay) by the Rio Uruguay. On the east, the boundary-line lies near 58° W. long., except a comparatively narrow tract, which projects between the Paraná and Uruguay as far as 54° W. long. On the west the boundary-line, south of 30° S. lat., is near 76° W. long.; but farther north it declines to the east, and at the north-western corner of the country it coincides with 68° W. long. The average width is about 620 miles. The whole surface is calculated to be 725,000 square miles, or nearly three times the area of France, and nearly six times a half of that of the British Islands.

Surface and Soil.—About one-sixth of the surface of this country is mountainous: the remainder consists of wide tracts of plain, subdivided into scattered small isolated ranges of hills, and an extensive system of low mountains, called the Sierra de Cordova.

I. Mountains, and Countries enclosed by them.—The mountains of the Andes lie on and along the eastern declivity of the Andes. This mountain-range, which traverses South America in all its length, from the Strait of Magalhaens to the Isthmus of Panama and the neighbourhood of the Caribbean Sea, is of comparatively moderate width south of 30° S. lat., hardly exceeding anywhere 100 or 120 miles; but north of that parallel the eastern side spreads out into an extensive mountain-region, the eastern border of which is more than 400 miles distant from the western declivity of the range.

The Andes from 46° S. lat., where they begin to constitute the western boundary of the Argentine Republic, dividing it from Chile, to 57° S. lat., are very little known. They seem to be the remains of the great and shattered mass, described by both the northern and southern lines of the Andes, and which, though it be very probable that they really exist, is more than a possibility that between this latitude and that of the Cerro de la Cara (38° S. lat.) four of these volcanoes are in the western range. In the eastern is the Volcano de Unalauken (37° 10' S. lat.).

Further north, between 37° and 34° S. lat., it is known that the Andes consist of two parallel ranges, which in some places approach one another within 30 or 40 miles, and at others are 70 or 80 miles apart. The eastern range is imperfectly known, but does not attain such an elevation as the western, nor part of it apparently being covered with perpetual snow. Between 36° and 35° S. lat., where a Cerro Nevado is marked on Parish's map. This range is known to contain one volcano, that of Pomahuida (near 36° 15'), which had three eruptions between 1820 and 1830, and which is in a state of apparent suspension. The whole extent forms the watershed between the rivers that run to the Pacific and Atlantic oceans, and is therefore considered as the boundary between Chile and the Argentine Republic, as well in its northward as southward extension. It is one of the most southern of these passes, that of Antuco, near the volcano of that name, rises in its highest part above the line of vegetation. The Planchon pass (about 35° 10' S. lat.) is much lower, as there is vegetation upon it; and it probably does not exceed 11,000 feet. The third pass, called II Passo de las Damas, occurs near 34° 50', and as it is clothed with vegetation even at its most elevated point, it is supposed not to rise above 11,000 feet.

Between 33° and 50° S. lat., the two ranges of the Andes are not far distant from each other, and they enclose the elevated valley of Tunuyan, which is about twenty miles wide, and 7500 feet above the sea-level. The ranges, which run nearly north and south on each side of the valley, are divided by the range of Cerro de Portillo, which traverses the valley obliquely, rises on the western chain of the Andes to 13,210 feet, and on the eastern to 14,363 feet. This pass is only open from the beginning of January to the end of April, being blocked up by snow from the remainder of the year. South of this pass is the Volcano de Maypu, or Puquenues, which is above 15,000 feet high, and always covered with snow.

Between 33° and 50° S. lat., the two ranges of the Andes recede from one another to the distance of forty or fifty miles. Between these ranges is the valley of Uspallata, which is about 160 miles long and 40 miles wide, of which width about 12 miles are level ground, and the remainder consists of barren and elevated spurs of the western range. A portion of the valley is 6200 feet above the sea level. Near 32° S. lat. the valley is traversed by some higher ground, which runs east and west, and from which the Rio de Mendoza runs southward, and a low western tributary of the Plata, which stream finds its way to the eastern plains by a cleft in the mountains near 33° S. lat., and the second by a similar passage near 31°. The soil of the valley is sterile, and impregnated with salt, except towards the northern extremity, where it is fertile, extending into a great tract which is east of the valley is called the Pampilla Mountains: it is about 10,000 feet high, and is partly covered with wood. The great chain of the Andes, west of the valley of Uspallata, occupies between 50 and 60 miles in width, and consists of four or five parallel masses of rocks, divided from
one another by ravines or gles. The highest summits of these rocky masses may attain the elevation of nearly 14,000 or 15,000 feet, as there is snow in the ravines even in April. The road which leads over them, and in the highest part is called La Cumbre, attains an elevation of 12,444 feet, and is sometimes impassable. The commencement of November to the end of May, but the remainder of the year it can only be travelled by foot-passengers, and with considerable danger, being then blocked up by snow. On the northern side of the road is the Volcano de Aconcagua, the highest of the range. The water of the river Puma, 32,000 feet above the sea-level; it is within the boundary of the Argentine Republic. 

North of 29° S. lat. the Andes assume a different character. The peaks are not as high as those of the north, but the central and eastern ranges rise rather abruptly from the plains along the eastern side of the Andes near 30° S. lat., and they terminate as abruptly near 28° S. lat. The three ranges, together with the wide intervening valleys, occupy a space of more than 120 miles in width. The western range, which alone is called the Andes, does not rise so suddenly. There snow: 1. 

No volcano occurs in this mountain-mass; and indeed no volcano is ascertainment as occurring between the volcano of Aconcagua (33° 15' S. lat.) and that of Atacama (23° 36'). The Andes in this part not so high as they are farther south, and these animals are often used occasionally, the country along the Pacific being nearly a desert. The central range is called Sierra Patamita, from the celebrated silver-mines which are found on its eastern declivity. To bring silver from these mountains to Boyle's is a considerable elevation, though short of the snow-line; but north of 29° S. lat. there is an enormous mass of rocks, the summit of which, being covered with perpetual snow, is called the Cerro Nevado. On this eastern declivity many mountain-masses are the mines. The eastern range of the mountains, called Sierra Velasco, preserves nearly an equal elevation in its whole extent, and its height probably falls short of 9000 feet, as it is rarely covered with snow even in winter. Off the coast of Chile is the Sierra Famatina. The valley which lies between the Andes and the Sierra Famatina is called the Vale of Guandacol: it is about 140 miles long, and 24 miles wide. A river, called the Bermejo, rises at the most northern extremity of the valley, and traverses it in a southern direction, until it reaches a point south of 30°, when it runs round the southern extremity of the Sierra Famatina, and entering the plain is either lost in the sandy surface of that tract or flows in a long chain in all directions. The valley of Guandacol is stated to be very favourable to the growth of wheat. There are some rich copper-mines, which are not much worked, because of the difficulty of bringing the metals to the coast. The population is very small, and does not speak the Quechua language, and who partly live on the vicuñas, whose skins supply an article of exportation to other provinces, where ponchos (cloaks) and hats are made of them. They have orchards, and cultivate small patches of ground. The valley of Famatina, which is enclosed by the Sierra Famatina and Sierra Velasco, is about the same length, but somewhat narrower, being hardly 20 miles wide. No stream runs through it. The southern half is a complete natural desert, and the mountains are places covered with salt. In the neighbourhood of the Cerro Nevada, the rills of water which descend from the mountains form small rivers, which run to the plains, and supply the means of irrigation. As the soil of these places is clayey and retentive of moisture, many tracts of moderate extent are cultivated, and produce Indian corn, peas, and trefoil clover, and several culinary plants, as artichokes, cauliflower and cabbages, and excellent pumpkins. The hamlets are small, and the houses are very miserable. The potato is indigenous in the Famatina mountains. From 6000 to 8000 barrels of wine are annually exported from this valley to Rioja, and thence to the other provinces of the republic, and the season of planting and gathering is in summer; from December to February the thermometer in the hottest part of the day varies between 80° and 106°, and in winter (June and July) it probably does not descend below 50°, as no snow falls on the Sierra Velasco, which 1000 feet above the valley. Heavy rain is uncommon, but snow is frequent, and at all seasons, on the Sierra Famatina. Thunderstorms also are common, and accompanied by very large hails. In April, a wind from the north, called sonda, sometimes blows with great force, and produces the effect of a sicroco; it raises the thermometer to 90°. 

North of 28° S. lat., the Andes cover an immense extent of country east of the high range which runs parallel to the Pacific. The south-eastern edge of this mountain-region follows a line beginning at the northern extremity of the Sierra Velasco, and running in a north-eastern direction to a place on the coast, where it extends to 12,000 feet above the sea-level. Below the confluence of the two rivers Lavayen and Rio de Tarija its two principal branches. Between 24° and 21° S. lat., the eastern border is near 62° W. long. The northern part of the mountain-range extends without the countries that belong to the Argentine Republic, and in the south the snow-capped Alturas de Lipez form its northern border. The descent of the Andes towards the Pacific terminates it on the west. The highest part of this extensive region, which lies between 63° and 68° W. long., and between 23° and 22° N. lat., is very properly called El Despoblado, or the uninhabited country. Its elevation has not been determined, but it is very probable that it rather exceeds than falls short of 15,000 feet above the sea. This estimation may be inferred from the total want of every kind of cultivation; even the quinoa appears not to succeed. It is however scantily covered with grass, on which numerous herds of alpacas and vicuñas find pasture, and chinchillas subsist. The only produce of gold collected in some rivers, and salt, which covers a large part of the surface, supply to the few Indian families dispersed over this inhospitable region the scanty means of subsistence. They are entirely independent, and possess no tracts of land, but live by this annual visit of the Indians from the towns in the valleys farther east. The surface of this tract presents no great variety of level, and is crossed by a road which leads from the town of Salta to Atacama in Bolivia. Though the whole region rises to so great an elevation, no part of it is covered with snow. Every one of the Andes, which constitutes its western border, does not contain one single summit which rises considerably above the general elevation of the whole mass. The country which surrounds the Despoblado on the south and east vary greatly in their level. From the southern border of the Despoblado, between 67° and 68° W. long., a range branches off, which runs south-south-east, and is called Sierra Amatavo and Sierra Ancasa. It terminates north of 28° S. lat., nearly in the parallel of the northern extremity of the Sierra Velasco, but about one hundred miles east of it. The country between this lateral range and the principal range of the Andes is traversed by another chain in all directions, forming the smallest of Despoblado, which is stated to be of the same elevation as the Sierra Amatavo. The valleys which lie between these chains are very imperfectly known, but their climate is described as hot and sultry, and in some parts of it it is supplied with valuable cotton and yellow pepper. The inhabitants cultivate wheat, and have herds of cattle, which find good pasture on the adjacent mountains. 

From the eastern declivity of the Sierra Amatavo, near 26° 45', the Sierra de Aconcagua extends in an east-north-east direction to the Rio Salado, on the banks of which it terminates at a point called El Pasage (near 23° S. lat.), where the river runs southward. This range is very high in the centre, but in the south it falls to 12,000 feet on the banks of the Rio Velasco, where a portion of it is always covered with snow; but farther east it sinks much lower, though it perhaps never falls below 10,000 feet above the sea-level. Opposite its eastern extremity, and on the left bank of the Rio Salado, there begins a mountain range which may be considered its continuation, as it runs in the same direction, and preserves the same general elevation. This range, which is called Sierra Lumbrere, or Santa Barbara, terminates in some hills on the banks of the Rio Velasco, several miles above the mouth of the river, and in the confluence of its two principal branches, the Rio Lavayen and the Rio de Tarija. A third range branches off from the eastern border of the Despoblado, near 22° 40' S. lat.: it has at first the form of an isosceles triangle, and extends to the north-west, and farther east it forms a table-land of great extent, called the Table-land of Yavi. Neither the range nor the table-land rises above the snow-line, but their general level can hardly be less than 12,000 feet above the level of the line of trees. The table-land, though a complete level, is destitute even of bushes, and severe frost is experienced.
on it in the month of June. It is only inhabited by guane-
coes and vieññas: it terminates with a steep descent on the 
River de Tarija, near 22° S. lat.

The countries enclosed between the eastern border of the 
District of Coroico, the Table-land of Yavi on the north, and the Sierra de Aconquija and 
Lumbre on the south-east, consist chiefly of high table-lands. 
This elevated mountain-region is furrowed by a few deep, 
wide, and very long valleys, which, being much depressed 
below the general level of the region, are comparatively 
well-cultivated and populous. The longest of these valleys 
is that which is watered by the Rio Guachipas or the upper 
course of the Rio Salto. It begins at its upper extremity, 
on the same tract, as the small island of Acay, in the vicinity of which are some silver-mines, and 
it extends nearly a hundred miles southward, when it meets the 
Sierra de Aconquija, and the valley and the river turn to 
the north-west. Near the Divide, on the vale the 
valley is too high to be fit for agriculture, and in these parts it 
is very narrow. But before it turns to the north-east it widens 
considerably, and the cultivation of the European cereals 
begins. Large quantities of maize and wheat are grown, 
and the quantity of these articles exported to the other 
valleys is considerable. The rich pastures on the adjacent 
mountains support great numbers of cattle, horses, and 
mules. There are also extensive plantations of European 
trees, as橡ie, by which brandy is made, which finds a ready 
sale in the neighbouring districts.

The Vale of the Rio Guachipas terminates in the Plain 
of Salta, which extends about twenty miles in every direc-
tion. Another valley runs northward from this plain to the 
foothills of the Cordillera, a distance of about 150 miles. 
Through this valley lies the road which leads from Salta to 
Potosi, and it has excited the admiration of all travellers 
on account of its great length, its comparatively small width, 
and the steepness with which the rocks rise on both sides. 
In many places the valley is hardly a furlong wide. This 
valley may be called the Valley of Jujuy, as the town of that 
named is situated nearly at equal distances from both extremi-
ties. The Valley of Salta, the vale of Guachipas, and, or Rio 
Jujuy, branches off from the Valley of Jujuy, and extends more 
than 100 miles between the Sierra Lumbré and an elevated 
table-land to the north of it. It is much wider than the 
Valley of Jujuy, and the settlements are much more nu-
merous here than in the other valleys. In these valleys 
tropical vegetation appears in all its luxuriance. Forests 
of large trees cover the banks of the rivers and ascend the 
hill to a considerable elevation. Besides maize, large 
guanches, and guane-trees, are grown and reported. In the 
lower parts the coca (Erythroxylon Coca) grows, whose leaves 
are chewed by the natives, and the maté, or Paraguay 
tea-plant, is indigenous.

The southern declivity of the Sierra de Acon-
quija and Sierra Lumbré there is a tract of considerable 
width, called the Plain of Tucumán, which is very fertile, 
and has a pleasant and healthy climate. The surface is 
furrowed by numerous small rivers, which origin on the 
decline, and at the foot of the range, and descend in a 
south-eastern direction to the lower country, which is farther 
east. This region is an inclined plain, which sinks to the 
south-east with an almost imperceptible slope. Having a 
hot and dry and healthy climate, and abundance of water 
for irrigation, it is the most fertile tract of the Argentine 
Republic, and is thence called the Garden of the Rio de la 
Plata. Its width south of the Rio Salado exceeds 70 miles, 
but that of the Rio Pilcomayo is much less. The population 
of this plain, which is very great, is mostly occupied in 
raising corn, rice, maize, and tobacco. Much 
tobacco is exported. The sugar-rute is said to grow natu-
ally in the low lands. The base and slope of the mountains 
are covered with tall trees, and supply pasture for cattle.

II. Plains.—The plains occupy about one-sixth of the 
surface of the provinces of La Plata. The most northern 
part of them, which is known under the name of El Gran 
Cordon, which forms the most of the mountain region as 
well as the banks of the Rio Paraguay, and from the northern 
boundary of the republic to the confluence of the Rio Salado with 
the Parana, occupying all the tract between these rivers. 
This immense country, which is about one-sixth of the whole 
Argentine Republic, is very thinly inhabited. There are only a few families, and those mostly 
of Indian origin, settled on the banks of the rivers. The 
interior is possessed by several aboriginal tribes, who wan-
der about in the woods, and live on the produce of the 
chaos and wild fruits. The most northern part of the desert 
appears to have annual rains, and the country is accordingly 
pretty well wooded. In this part, which lies between the 
River de Vermejo and the Rio Paraguay on both sides of the 
Rio Pilcomayo, which is called the Los Llanos, there is 
considerable number of independent tribes, though the several families are generally small. The southern 
portion of the Gran Chaco, between 25° and 30° S. lat., is 
the most desert part of the country, and the general 
character of the soil is sandy, and in many places it is 
covered with inerustations of salt; in others it is interspersed 
with small salt-swamps. No part of it produces grass, but 
there are trees which are covered with stunted prickly trees. It is 
uninhabited, except on the banks of the Rio Salado, where a 
few families have settled.

The country which lies west of the southern portion of 
the Chaco, and extends to the banks of the Rio Dulce, 
though not considered as forming a part of it, does not 
materially differ from it in features, soil, and vegetation, except 
along the banks of the Rio Dulce, the water of which, being 
sweet, can be used for irrigation, and is in many places used 
for that purpose.

West of the Rio Dulce and between 28° 30' and 35° S. 
lat, a desert extends as far west as the neighbourhood of 
the Sierra Velasco, from which it is separated by a fertile 
tract, called the Altiplano, hardly 20 miles wide. Where 
the desert is traversed by the road between the Rios 
Paraguay and Santiago del Estero, near its eastern extremity, it is about 69 
miles wide, but farther west it grows much wider. The 
surface is level, here and there interspersed with hillocks; 
the rock is covered with the same barrenness as the country, 
which has been described. Hence the desert has obtained 
the name of Great Salt desert. The vegetation is limited to a kind of salsoas, from 
the ashes of which soda is extracted. This desert is probably 
the hottest part of America, and during the prevalence of 
the northern winds in summer being almost insupport-
able in those places which are built on the borders of this 
desert, as Santiago del Estero. This may be mainly attri-
buted to the want of wood in the soil, but partly to the lowness 
of the country, it having been seen by many observers, that the surface of the desert is only a few feet 
above the level of the sea at the town of Buenos Ayres, 
though it is 700 miles distant from that point.

That part of the plain which lies between 30° and 32° S. 
lat. exhibits a different character. Nearly in the middle 
of it is the Sierra de Cordova, a system of heights, which in 
another place would be called mountains, but in the 
neighbourhood of Cordova the stony-scaped Andes can only be called hills. It was formerly supposed that this range was united with the Andes, but it has been ascertained that a plain 
200 miles wide lies between them. The more elevated 
and mountainous part of this system is between 36° and 32° 
S. lat., and consists of hills more than 12,000 feet high north to south, but the width does not exceed 50 miles. The southern part, between 31° and 32°, is a small table-land, about 30 miles wide, and growing narrower towards the south. The declivity is gentle towards the base, but near the top it is steep. The plain is covered with grass, but is entirely devoid of trees. It may be about 2500 or 3000 feet升高 above its base, and 
perhaps 3500 or 4000 feet above the sea-level. In winter 
it is sprinkled with patches of snow. The short valleys, by 
which the western side is furrowed, produce abundance 
of maize and fruits, and this is also the case with the long 
valley, which runs along the eastern unbroken declivity. Near 
35° S. lat., the table-land branches off into two ridges, of 
which the northern, called the Cordillera de Santiago, and the western the Sierra 
Serrarruecas. They run north and north-westward, and at 
their northern extremity are more than 50 miles from each 
other. The intervening country is a succession of stony 
or sandy ridges flat at the top, and alternating with broad 
pastoral valleys interspersed with plantations of figs and 
peach trees.

The country which extends from the Sierra de Cordova 
to the Rio Parana is hilly, or strongly undulating along 
the base of the mountains, and produces maize, corn in 
the lower tracts where the fields can be irrigated. This 
part of the country extends about thirty miles, when 
the country sinks into somewhat irregular plains. Some parts 
ed of these plains are watered, but others are without 
water, which becomes more scarce as we proceed farther 
east, until the woods re-appear at some distance from 
the banks of the Parana. These woods chiefly consist of low
minnows or stuntted prickly trees. The plains are generally covered with coarse grass, but in some parts, especially in the interior disappragon, there are numerous small streams which flow from the eastern declivity of the Sierra de Cordova, and unite into three rivers, the Pr-morco, Segundo, and Tercero, do not join the Paraná, but are into small branches of the same river, which, however, in the dry season, is very shallow, and has hardly water enough for small boats. The Rio Dulce, a large river which rises in the Sierra de Aconquija, and runs about 400 miles, is likewise lost in an extensive salt lake, called Laguna Salada, near Corrientes. The salt lakes in which these rivers are lost occur between 30° and 32°, and near the meridian of 62° W. It seems that a deep depression runs along this meridian, and that the country between it and the Pacific is much more elevated. There are agricultural settlements in this country on the banks of the rivers, and small hamlets, inhabited by herdsmen, occur on the plains. Though the country is indifferent, a considerable number of cattle is reared. The country which surrounds the southern extremity of the Sierra de Cordova, and extends to 33° S. lat., resembles in its general character that which is to the east of it, except that it is traversed in several places by narrow ridges which have been elevated and approached by deep valleys. The soil is much more vigorous, and the soil more favourable to agriculture than in the wide plains which lie between them. The country which lies on the west of the Sierra de Cordova, from 33° to 34° S. lat., and inland from the range, is pearly altogether bare of grass. Rain is scarce in all the countries of South America south of 24°, and this want of moisture is the chief reason why cultivation extends so slowly in these parts. In the country west of the Sierra de Cordova it never rains, nor is the ground ever refreshed by dew, which falls abundantly in the pampas farther to the south-east. The soil of this region is composed of a loose and friable clayey loam, and the greater part of it contains stunted trees; tracts of land covered with salt incarnations, or with grass, are only occasionally met with, and never occupy a large surface. The grassy tracts are most numerous near the southern extremity of the Sierra Velasco, where they are called Los Llanos, and supply pasture for the numerous herds of cattle.

That part of the plain which extends from 33° S. lat. to the banks of the Rio Negro, the southern boundary of the Argentine Republic, is known under the name of Pampas. Though generally considered as one plain, extending on a perfect level from the shores of the Atlantic to the base of the Andes, it has been observed that nature has divided it by some tracts of more elevated ground into several regions, which each present a perfect character. The most prominent of these is the del Vuelca, which is called the Sierra del Vuelcano (opening), is only a few hundred feet high, and has an excellent pasture on its summit. About 40 miles from the sea the ridge is interrupted by a wide gap or opening (called by the aborigines del Vuelcano), and on the west of this opening rises another ridge, which has various names, being broken by several other gaps, and extends in a south-eastern and northwestern direction about 200 miles from the Atlantic. Where this elevated ground approaches 61° W. long., it returns to the north, and runs in that direction to 35° S. lat., when it turns more to the west, and may be said to terminate where the parallel of 34° cuts the meridian of 62°. This part of the higher ground is a large, oval, elevated by low hills, which occur at great distances from one another, and by a few low ridges. Though most travellers describe the country north of 34° in the direction of this swell as a perfect plain, it is not so. It is evidently broken by higher grounds, and large ridges. The pampas have their origin in this elevated tract. It is remarkable that the water of most of them is salt, especially in summer, when the volume is much diminished, though they flow through a country which is not impregnated with saline matter. From this it may be inferred that extensive deposits of salt must exist in the high ground on which they originate.

The Rio Salado, which rises near the point where the parallel of 34° cuts the meridian of 62°, runs in a south-eastern direction about 300 miles, and divides the Eastern Pampas into two nearly equal parts. Though numerous settlements have been made in the country north of the Rio Salado, it is left to present its great beauty and character in its natural state. It is a continuous level plain, covered with coarse luxuriant grass, growing in tufts and partially mixed with wild oats and trefoli. Extensive tracts are entirely overgrown with this, and there are hills which, though they are used for fuel, as the country is entirely without timber and shrubs. Near the dwellings of the inhabitants, only single trees are met with. The level plain contains shallow depressions, into which the rain-water is collected and forms pools. This water, lying in the caras, is then collected, and the shallow depressions are then covered with rich grass, which supplies pasture during the hot weather. Thus this country is able to maintain immense herds of cattle and horses; and it is observed that the coarse grass and the thists gradually disappear when trodden down by the animals, and are replaced by a fine turf; this is especially observable in the neighbourhood of the town of Buenos Ayres. Though the great extent of the low country is regarded as a very important object of agriculture, the sheep have much increased of late years, and wheat has been more cultivated. The latter is now grown to such an extent, that not only the importation from the United States and South America, but even the exports of the Buenos Ayres, in several months, and fertilised by the muddy deposits of the sea.

The country south of the Rio Salado is of a somewhat different character. Near the banks of the river it is on a level with the country north of it, which resembles in every respect; but about ten miles from the river swamps begin, which extend over a great part of this region. Towards the sea the swamps are nearly 100 miles wide; but farther west they grow narrower, until they terminate at the confluence of the Rio Salado with the Rio Flores. These swamps are thickly set with tall canes and reeds, and in many places interspersed with small lakes and ponds. They probably owe their existence to the circumstance of their surface consisting of low undulations, dissected by small streams, the waters of which cannot make their way to the sea by the Rio Salado or to the sea. These swamps form a great obstacle to the extension of agricultural settlements; for though the country along the base of the Sierra del Vuelcano and the western coast resembles the country south of the Rio Salado in inferiority to fertility, a country of the Rio Salado, no agricultural settlements have been established here.

North of the Bahia Blanca (near 39° S. lat.) a mountain of considerable elevation rises abruptly over the plain: it is called Sierra Ventana, and its elevation above the sea-level is about 3500 feet. This mountain extends north-west for about 20 miles, but grows lower towards the west, where it is separated by a depression from another and lower ridge, which runs in the same direction, and is called Sierra Guanini. So far this country is known, but farther west it has not been explored. It is however known that in the same direction there occurs a vast forest, three days' journey long, which covers a hilly tract, and other forests a similar description occur in the centre of the Pampas, and lie in the same direction.

The country between the Sierra del Vuelcano and the Sierra Ventana is marked by a level surface, interspersed with sand-banks in its natural features the country south of the Rio Salado. Along the base of the Sierra Ventana extends a level country, interspersed with some low hills; the surface is dry, and fit for agricultural establishments. But in approaching the centre of the country the flat level is elevated, a large bed of reeds. He compares this tract with the
THE only intersect land too known in the muriate from the surface the loose hilly of growth are covered in grass cattle-farms. That extends more than 100 miles from north to south, with an average width of 40 miles. It is encumbered with brush-wood and studded with small trees. At the southern extremity of the country, along the banks of the Paraná, there is a low tract, which is subject to occasional inundations.

The Paraná river, which flows from Ybera in a north-eastern direction to the boundary-line of Brazil, is known under the name of the Missiones, from the circumstance of the Jesuits having collected here a great number of hilly-trees, which were the stimulus of life. The south-western part, which is undulating, has a soil of great fertility, producing cotton, sugar, and other tropical productions. To the north-east of it, the country rises into high hills and mountains, which are covered with high timber-trees, the most southern which occur east of the Andes from the Strait of Magalhaens.

Riviers.—All the rivers which drain the Argentine Republic, as far as it is situated north of 34° S. lat., carry their waters to the wide river called La Plata, and La Plata, Rio de la Plata, La Plata, as [Plata, Plata, P]. Before they reach this fresh-water sea, they form two large rivers, the Paraná and the Uruguay. The Paraná originates hardly twenty miles from the shores of the Atlantic, the largest river of Brazil. The Paraná is a river which in that country at its confluence with the river Iguazu, the Paraná continues to run between the Argentine Republic and Paraguay in a southern direction for about 50 miles, when it gradually turns to the south-west, and continues in that direction to the large island of Appendix, a distance of about 100 miles. This part of the river is not navigable in all its extent, as there are several rapid and small falls, the last in the neighbourhood of the island of Appendix. The chief port on the west of Appendix is Guazuí, the chief port on the east of Appendix is Piriápolis. From this point the river runs about 100 miles, when it is joined by the Rio Paraguay from the north, and at the point of confluence it suddenly turns to the west of south. Below the junction with the Paraguay, the width of the river varies from one mile and a half to two miles, but the whole volume of water is always in one channel, as the current is divided by a continuous series of islands overgrown with low trees and subject to inundations. These islands and the numerous sand-banks render the navigation slow and tedious. At Santa Fé the river begins to divide into various branches, and to run southward. After a course of about 100 miles it turns to the south-east at Rosario, and thence to its mouth in the La Plata the number of its branches increases. It opens into the La Plata with a large number of embouchures, forming a long but comparatively narrow delta, composed of a great number of islands. The most northern branches fall into the wide mouth of the Rio Uruguay. Its principal outlet is that which is called Paraná, and is navigable for a space of 20 miles, which is seldom less than two fathoms and a half of water. The mouth called Paraná de las Palmas is the deepest, next to the Guazuí. The Paraná runs nearly 900 miles within one hour's journey, 900 miles being the course of the river. However, 900 miles are navigable for vessels of 500 tons all the year round. From July to December the river preserves its natural level, but towards the end of the year, the intertropical rains having filled the upper branches, it begins to rise, and continues to do so for four months, to the end of April. The average rise below its junction with the Paraguay is stated

better part of the Cambridgeshire fans. These swamps probably owe their origin to the rivers which depend with a river called the Río de la Plata, and the Rio Uruguay, the three others to the Paraná. The surface of this low tract however is only a deep swamp, interspersed with numerous small lakes. It is chiefly covered by aquatic plants and shrubs, but in most parts it is impassable. The confluence of the Paraná with the Uruguay has an undulating surface, the heights seldom rising into hills, except in the interior and at a few places along the Paraná. It is chiefly overgrown with trees, between which there are occasional mirror-like water. On the plains numerous herds of cattle are pastured, which constitute the wealth of the country. Though the trees are of stunted growth, the entire forest of the surrounding countries makes the ground over which the curious bands of the cordillera pass, a populous one. Grain, potatoes,ima, and wood is grown. The wood is used for the building of houses.

The great part of the Western Pampas, namely, all the country west of 62° W. long., and extending thence to the Andes between 34° S. lat. and 40° S. lat., is almost the only part of the country which has not been explored along the courses of the rivers, except in line, in which it has been traversed by land. The few points which have thus been examined are too isolated to authorise us to form an idea of the capabilities of this immense country. But we are not less certain with that portion of the plain which lies between 33° and 34° S. lat., as it is traversed by the great road that leads from Buenos Ayres to Mendoza, and thence over the Andes to Cordova.

In the country which surrounds the sources of the Rio Salado, the soil of the plain begins to be impregnated with muriate of soda, and continues more or less so to the base of the Andes. But it has a different character east and west of 60° W. long. East of that meridian, a great part of the surface is covered with extensive saline swamps overgrown with reeds; the more elevated spots of these swamps are covered with a saline efflorescence. The dry tracts which intermingle with the swamps are overgrown by coarse grass that attains a height of six feet, and resembles rye or wild oats. This grass grows in clumps, and is salt to the taste. The soil consists of a dark friable mould, without the smallest pebble in it. In every point there is a constant supply of brine, which is derived from the surrounding salt-marsh. Some of these morasses are between 10 to 20 miles long, and nearly as wide. These lakes are most numerous between 64° and 65° W. long., where an extensive shallow depression occurs, perhaps 60 miles in breadth, or 160 miles to the south of 34° S. lat. This depression is filled with water, when the Rio Quinto, which originates in the Sierra de Cordova, is raised by a freshet from the mountains, at which time it sends a great portion of its waters into this depression. When the water has been evaporated by the heat of the summer, it only remains in the numerous lakes and ponds with which the depression is interspersed. Where the plain approaches the hilly country that surrounds the south side of the Sierra de Cordova, the surface is broken in many places into low hills, with a steep ascent and run by ravines; the hills are separated from each other by grassy plains. The grass is smooth, short, and thick, and there are low bushes on it. The hills are partly clothed with thorns and a stunted growth, and with brushwood. The rivers which intersect this country run in beds from 20 to 40 feet below its surface; their banks are very steep, but during the greater part of the year, there is no water in them. It is only by the hilly tract of this part of the Western Pampas that there are any agricultural settlement in the level country there are only cattle-farms.

A river extends from 66° W. long., to the base of the Andes presents a less level surface. The soil consists of loose sand, impregnated with saline matter, and unfit for the growth of grass. The vegetation is limited to low thorny trees, some resinous bushes, and saline barilla plants. But this arid and sterile soil, when irrigated, is changed into the most fertile fields. The saline matter, as it seems, when applied to a soil so light, becomes by the assistance of constant moisture the most active stimulus to vegetation, and serves as a never-failing manure. The rivers in this region, being very little depressed below the general surface of the plain, are extensively used for irrigation, and the settlements on the Rio Tunuyan, Rio de Mendoza, and Rio de la Plata, consist of numerous extensive and rapidly increasing in extent and number. Indian corn and wheat are grown to a great extent, and exported to the neighbouring countries. The soil seems particularly adapted to fruits. The principal kinds of vines, figs, peaches, apples, olives, and nuts are very extensively encouraged, and go into the neighbouring countries, especially to Chile.

The Argentine Republic contains also an extensive tract of hilly country, which lies between the rivers Paraná and Uruguay. In the northern part of this region is the Laguna de Ybera, which extends from north to south in some places nearly 100 miles, and nowhere less than 40; and from east to west about 80 miles. It covers an area of more than 1,000,000 acres. A narrow strip of elevated ground divides its northern border from the Rio Paraná, and it is supposed that it is supplied with water from this river by
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to be 12 feet. It then inundates the adjacent grounds, es-
pecially below Santa Fé, and the tracts which are thus laid
under water form a system that is confined between two
parallel lines, an estimate which is perhaps overrated. The
water leaves behind a grey slimy deposit, which is very favour-
able to vegetation. At the end of April the water be-
gins to fall, and the fall is somewhat more rapid than the
rise.

The Paraguay, the largest of the affluents of the Paraná, or Paraguay, originates likewise in Brazil. [Vol. v. p. 335.] Having passed through the Estrecho de S. Francisco (20° S. lat.), at the point where Argentine is separated from Brazil, it enters the large
basin of a great concave basin in a southern direction, dividing Paraguay from the
Gran Chaco, until, at 23° 30' S. lat., and about 20 miles
below Asuncion in Paraguay, the channel is narrowed at a
place called Angostura by protruding rocks, between which
the current runs with great rapidity. From this point it
runs west by south to its junction with the Paraná. Vessels
of considerable size may navigate the river within the
boundaries of the republic, through which it runs about
400 miles. The channel in these parts being confined be-
tween high banks, the water rises 30 feet, but the inunda-
tions of the adjacent tracts are not extensive. Its waters
are increased by two large tributaries, the Pilcomayo and
Tupi-p вари, whose tides, being depressed by a salt
lake on the coast, run into the sea, and by two small
branches. The southern, called Rio de S. Julian and after-
wards Pilaya, originates in the Despoblado; and the north-
ern, the proper Pilcomayo, derives its waters from the nu-
merous rivers which descend from the Andes between the
Desaguadero and the mouth of the Salado, and partly also from those which originate in the mountains
that enclose that vale. These two rivers receive the drain-
age of the eastern declivity of the Andes between 15° and
25° S. lat., and early in the rainy season of each year
flow to the sea 30° 40' S. lat. and 62° 45' W. long. After the union of these branches the Pilcomayo is a broad and deep river, and runs about 700 miles to its junction with the Paraguay, first easterly and afterwards south-east. In this part of its course it flows with innumerable windings through the
Gran Chaco, where it is joined by no large river, and where
its waters are gradually absorbed by the arid country
through which it runs. Thus it becomes extremely shallow,
and leaves at intervals arms into which it goes miles 80
above its mouth is navigable, even for small boats, to a dis-
tance exceeding 100 miles from the Paraguay. These two
arms are called Araguy Guazu and Miti. The Vermejo
derives its waters from the Despoblado, the Abra de Corta-
dera, and the table-land of Yavi, descending from which
elevated regions it forms two rivers, the Rio de Tarija on the
north, and the Rio Lavayén on the south. The first, turn-
ning southward, joins the second at the eastern base of the
two branches of the Tarija, and runs about 700 miles through the
Gran Chaco with numerous windings, until it joins the Rio Paraguay nearly 40 miles above its confluence with the Paraná. The Rio Vermejo is of very good
water for large boats as far as the union of its great
branches.

The largest affluents of the Paraná, next to the Paraguay,
is the Salado. This river rises on the southern border of the
table-land of the Despoblado under the name of Cachi,
and runs southward until it meets the river Santa María,
which comes from the Sierra de Acoquija, when it turns
east by north, and is called Guachipas. Having drained the
valley of that name, it enters the plain of Salta, where it
joins the Salado, which rises on the eastern side of the Andes,flowing through the opening between the Sierra de Aco-
quija and Sierra Lumbre, where it is called "El Passage." At
this place it is traversed by the road leading from Cor-
dova to Salta, and is fordable in the dry season, but during
the rains the river is triple, and takes on thelector of 500 milli-
ons to its junction with the Paraná near Santa Fé. Its
course through the plains is more than 800 miles, of which
about one-half, as far as the small town of Mataza, is said
to be navigable.

There is a peculiar system of drainage in the western
Pampos along the base of the Andes, between 31° and 35°
S. lat. The waters which descend between these parallels
from the eastern declivity of the mountains are collected in
three systems of lakes, united by channels by which the
surplus water is carried from one system of lakes to the
other. As these channels lie from north to south, it is ob-
vious that the system on the north is the lowest, and the
system on the south the lowest. The most northern, called
the lakes of Guanacache, occurs between 31° 40' and 32°
Neither the number nor the extent of these lakes is exactly
known. Their margins are covered with salt inundations
during the winter season. The middle fresh-water rivers, the Rio de S. Juan and the Rio de Men-
doa, both of which rise in the Vale of Uspallata between
the two ranges of the Andes. The Rio de S. Juan drains
between the two ranges of the Andes. The Pilcomayo, which runs through the Paramina range near 31° S. lat., flows east-
ward about 50 miles, and then southward a somewhat
greater distance. Its waters in the plain are used for irrigan-
tion. The Rio de Mendos, or de León, which flows in the
south district of the Vale of Uspallata for about 40 miles,
then turns eastward, passing by a channel through the
Paramilla range, and then declining to the north, it likewise
reaches the lakes of Guanacache. The waters of this river
are used for irrigation. It is supposed that the Rio Vermejo, which waters the Vale of Guanaco, also reaches
the lakes of Guanacache by a southern course; but the
waters of this river, which are fresh in the vale, imbibe a
salt character in the open plains where it is at the end of
the snow on the Andes melt; during the remainder of the
year it is salt, and its banks are covered with saline
incrustations. The lakes of the Bevedero are likewise imperfectly
known, both as to number and extent. The same remark
properly applies only to the most northern of these; the
to the bevehemo is salt for nine months of the year, and on its banks salt
collected for sale in that season. These lakes lie between 33°
and 34° 30' S. lat. and between 65° and 67° W. long., and,
besides the Desaguadero, receive the waters of the Tunuyan.
This river drains the vale of the same name, which is en-
closed by two ranges of the Andes, breaks through the
eastern chain below the Portillo pass, then runs through
the plain, first northward and afterwards eastward, falling
into the lakes of the Bevedero after a course exceeding
200 miles. Its waters are used for irrigation. All the
waters of the Rio Tunuyan do not reach the lakes, but a
portion of them is carried southward by an arm called Rio
Mitra, which forms a considerable lake, about 40 miles
long, and 10 miles broad, during the rainy season. This
lake, like the others South of the Salado river, is fed
by the Desaguadero del Diamante, which runs about 36
miles, and is then lost in the Ure Laquen, a lake of con-
siderable extent, but very imperfectly known, in 37° S. lat.
its waters are very salt, whence it derives its name,
and in the direction of the Rangues, signifies bitter lake.

Of the rivers falling into the Atlantic south of the La
Plata, we have mentioned the Rio Salado of Buenos Ayres,
which is unfit both from the point of navigation and of
Lebu, or Rio Colorado, was until lately almost entirely
unknown, but it is now ascertained that it rises in the
Andes, and flows without interruption to the sea. It is said
that it is navigable only about 100 miles from its mouth.
Near the mouth it divides into several arms, including an
extensive delta. In December it is much swollen and runs with great rapidity. The Cusu Leibu, or Rio Negro, which nearly coincides with the coast in the Argentine Republic, rises within the range of the Andes in two branches; the Catapuliche, which runs south, and the Limay Leibu, or Rio de la Encarnacion, which flows north. At certain seasons 80 to 100 miles of these two rivers join and break through the eastern range of the mountains by an easterly course, preserving the name Limay Leibu. After running about 100 miles north-northeast, the river is joined by the Northern, a large affluent, which is said to be navigable for small craft more than 200 miles: after this junction the Limay Leibu takes the name of Cusu Leibu. The remainder of its course lies in an eastern and south-eastern direction for more than 400 miles, being the most navigable part of the Andes, where the two principal branches unite within the ranges of the Andes.

Climate.—The greatest differences of level within the territories of the Argentine Republic produce a very different climate in the various regions of which it is composed. It is very probable that the difference of heat and cold felt on the table-land of the Despoblado and the countries surrounding the Great Salinas is the greatest that occurs on the American continent. The rainfall in any region varies more than 1000 miles from each other. We are not further acquainted with the Despoblado than that it does not admit of any kind of cultivation, which renders probable that it is only a semi-desert, or the southerly wind was not posed to frost. Respecting the climate of Santiago del Estero, Temple says, that in December, 1825, during three or four days and with a hot northerly wind, the heat was so great that the skin on the face and hands, and of those who remained in doors, that leaves fell scored from the trees, and the bark of several became cracked and shrivelled just as if fire had been applied; and that the bolts, locks, and keys of the doors were so hot that they could not be touched in the hands. The inhabitants were afraid they should die by suffocation. The climate of the other parts of the country is between these two extremes; but as far the greatest part extends in wide plains and uncultivated valleys, their climate is rather hot then cold, and in most places the summer heat is oppressive, being from 90° to 100°. As to rain, it is remarkable that, in the countries extending along the base of the Andes where rain falls, it generally does not come down in autumn and winter, as in the southern countries of Europe, but in spring, from October to January. No particular observations on the climate of these countries have been published, except some with respect to the Eastern and Western Pampas. The climate of the Pampas is in both is about as good as any, there being some slight frost in July and August, but there is a great difference in regard to rain and the moisture of the air. In the Western Pampas the air is extremely dry, and there is no rain; in the Eastern Pampas, also, the climate is very dry. The Eastern Pampas are a very wet country. Rain occurs all the year round, and a heavy dew falls every night. In these parts sudden changes of the atmosphere are not rare; sometimes they raise or depress the thermometer 20 or even 30 degrees in a few hours. The abundance of moisture in the air and the sudden changes from heat to cold are due to the winds. During the greater part of the year the prevailing winds are northerly; and they bring with them the heated air of the lower latitudes, and, in passing over low and inundated tracts, take up a great deal of moisture; so that on arriving at the Eastern Pampas, the united effect of heat and moisture produces unpleasant impressions, like those of the sirocco of the Levant, causing lassitude and relaxation, though rarely disease. Then suddenly bursts out a pampero, or south-west wind, which, blowing over the immense extent of the dry pampas and proceeding from the Andes, rushes with incredible fury, and is more like a West India hurricane than the gales experienced in countries without the tropics. The pamperos are sometimes accompanied by awful thunder-storms, and frequently by clouds of dust so dense as to screen the sky. They generally last only a quarter of an hour. But in 1793 one blazed up for three days, and the bed of the La Plata was laid dry for a distance of 10 miles from the shore, and many vessels which had been sunk years before in the river were found in a month by the inhabitants, who walked about it on the bed of the stream without wetting their feet. The pampero however precipitates the moisture of the air, and restores to

it its usual degree of elasticity. At Buenos Ayres the thermometer rises to 90° in January, 85° in May, and in August sinks to 36°. The mean temperature of the year was about 62°; that of the summer (January, February, and March), 72°; of the autumn (April, May, and July), 58°; that of the winter, 54°; that of the spring (October, November, and December), 60°.

A part of the pampas is subject to periodical drought of long duration, especially the north-eastern corner of the Western Pampas, which includes the northern part of the prov. of Buenos Ayres, and the southern of Santa Fe. For three years (1827-30) so little rain fell, that even the thistles failed, and the whole country assumed the appearance of a dusty high road. Vast numbers of birds, wild animals, cattle, and horses perished for want of food and water. The lowest temperature ever recorded was 20° below zero; the annual rainfall of Buenos Ayres alone was one million head. According to information collected by Darwin from the natives, these droughts are periodical, and occur at intervals of about fifteen years.

Productions.—Respecting the principal objects of agriculture, the Argentine Republic may be divided into two regions, which are separated from each other by the Gran Salina. On the north of it they partake of the intertropical climate, and produce a coco plant cultivated in most of the lower valleys. In the more elevated tracts, tobacco and cotton succeed well, and are cultivated on a large scale. South of the Gran Salina, grains are grown in the whole of the interior of Europe, except that no rice is raised. Wheat and Indian corn are the principal crops, but barley and lucerne are also extensively grown, especially near Mendoza. The northern provinces also cultivate the potato, as the yuca, the fruit of which, mixed with maize, the Indians make cakes, and by fermentation, chicha, an intoxicating spirit; the quinaquina, the palm-tree, the fruit of which is the Paraguay tea, or mate, is taken, the cactus that bears the cochineal insect, the also from which yarn and ropes are made, and the indigo and some other plants used in dyeing. In the Gran Salina itself a kind of salola grows from which soda is extracted. The fruit trees which are cultivated are mostly those of the South, as the orange, vine, olive, peach, apricot, apple, and pear. On the banks of the Paraná eda sylvestre (wild silk) is collected, which is left in the woods by a certain caterpillar.

Though the cultivation of wheat has increased so much that it now forms an article of exportation, the principal exchangeable wealth of the republic is derived from its herds of cattle. The number of heads is above four millions, of which a large proportion are in the Eastern region. Three wander about in the pampas nearly in a wild state, and the largest items in the list of exports consist of hides, hair, horns, tallow, and jerked beef. The horses, asses, and mules, which are more useful than the cattle, are exported to the West Indies and the island of Mauritius. Some attention has lately been paid to the rearing of sheep, and wool has of late years been exported to a considerable amount; goats and hogs are less common. Most of the South American wild animals are found in the republic, as the puma, the jaguar, the armadillo, the tapir, the tajassao, the bisaco (a kind of rabbit, which is very numerous, and whose skins have lately been brought to England for furs), and, some kinds of monkeys. The great many found in the plains and on the mountains, but the wild lamas, vicunas, and alpacas only in the cold regions on the elevated table-lands. The water-hog, or capichino (Hydrochoerus Capichor), the largest of the rodent animals in the world, is very common on the banks of the Paraná; Darwin shot one which weighed 98 pounds. The most common birds are the emu, the condor, green parrots, wild ducks, pigeons and quails, the carrion-culture, and several other rapacious birds. Serpents, not numerous, but there are many kinds of noxious insects, venomous spiders, bugs or beneulas, fleas, musquitos, and nignas. Locusts, as in all countries where arid plains are found, frequently destroy the crops. Bees are common; in the country about the Andes and on the Paraná, and wax is collected in several districts. The cochineal insect is reared on the banks of the Salado. Along the coast south of the La Plata, many varieties of the woolly apple worm which is spoken about above, whose name is given to the insects is one called clavito from its resemblance to a little needle; it is smaller than the cochineal, and occurs only
in Catamarca and Tucuman, where it is used for dyeing the vicuna and alpaca wool.

The southern Andes and all the pasture-grounds north of the Rio Salado of Buenos Ayres, and of 35° S. lat., which line was established in 1740 between them and the Spanish government. This line was secured on the side of the Spaniards by a few military posts, and, though the Indians were allowed two years to time to live within it, it is now considered as completely established, the whites lived in a state of comparative security. But during the confusion with which the establishment of the political independence of these provinces was attended, and during the war with Brazil, the Indian shepherds, who had by the authority of individuals, called dictators. To use the

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The provinces of the Rio de la Plata, in 1836-1837, according to Pariah, is as follows:—

Buenos Ayres from 180,000 to 200,000
Santa Fé 15,000 20,000
Entre Rios 30,000 30,000
Corrientes 35,000 40,000
Chaco 60,000 85,000
Santiago 44,000 50,000
Tucuman 40,000 45,000
Salta 30,000 60,000
Catamarca 30,000 35,000
La Rioja 18,000 20,000
San Luis 20,000 25,000
Mendoza 35,000 40,000
San Juan 22,000 25,000

600,000 to 675,000

This is exclusive of independent Indians within the territory claimed by the republic.

States and Towns. 1. Buenos Ayres, the largest and most populous of the republics, has lately extended its southern boundary by the Bahia Blanca, a deep inlet and good harbour near 39° S. lat., and has a coast-line along the La Plata and the Atlantic above 600 miles in length, which however contains no harbour for large vessels, except that of Buenos Ayres (La Plata, Rio de la Plata, and Bahia Blanca) near the most northern, and that of Bahia Blanca at the southern extremity of the coast-line. That of Buenos Ayres is bad, but Bahia Blanca is a good one. The new boundary-line on the west runs northward from Bahia Blanca to the Uspata, a lofty, curving eastward, and on this side the state is surrounded by countries which are still in the possession of the native tribes, no whites residing west of the line. A line drawn east-north-east from Melipique to the Parana, between the divide of that river and the coast of Santa Fé, forms the boundary of the state of Santa Fé.

The surface is estimated at 75,000 square miles, about 8000 less than the island of Great Britain. The whole country is a level plain, with the exception of the districts adjacent to the western line, which are somewhat hilly, and the ranges of the Sierras del Vuilcan and Ventana and those connected with them, which traverse the southern districts. A large portion of it is fit for agriculture, and by far the largest part of the articles exported from Buenos Ayres are drawn from this portion of the state, where the soil is a deep, loamy, and corn. All the inhabitants north of the Rio Salado are of Spanish origin, but the countries south of the river are mostly occupied by tribes belonging to the Puelches. The remains of extinct species of large animals of the convulsions of the earth are frequently observed in the western districts. As this state alone has a coast-line, and consequently is thus brought into connection with foreign nations, the provincial government, though not by an express agreement, carries on the business of the Argentine Republic with foreign powers. The executive, according to the constitution, consists of a governor, or captain-general, as he is styled, aided by a council of ministers appointed by himself. He is responsible to the Junta, or legislative assembly, by whom he is elected. The Junta itself consists of 44 deputies, one half of whom are annually renewed by the people. But this constitution can hardly be said to exist, since Rossa, as dictator for life, has taken all the business and power into his own hands.

There is no town of importance in this state, except Buenos Ayres. [Buenos Ayres.] S. Pedro and S. Nicolas, which are on the banks of the Rio Paraná, contain only from 500 to 600 inhabitants.

2. Salta was originally founded by the Junta, and afterwards was colonized by the native tribes. It is situated in the province of Salta, between the Interior and the Salta, and the Sucre, a large river, which runs eastward, and the Lago Salado de los Toros, a large lake, which is situated in the province of Cordoba, and is divided into two branches. The river has a number of rapids, and the surface is unfit for agriculture, though it supplies indifferent pasture for cattle.

3. Entre Rios, so called from being situated between the rivers Uruguay and Paraguay, comprehends the western portion of the country so situated, the boundary-line between it and Corrientes being formed by the rivers Guaycuru and Mocoreta, between 30° and 30° 30' S. lat. The former falls into the Parah, and the latter into the Uruguay. It has the advantage of being abundantly watered by numerous small streams, and has extensive forests which supply fire-wood and materials for carpenters' work. The soil is in general fertile, and covered with luxuriant vegetation, though numerous species of cattle are imported from Europe, and the exportation is principally carried on by vessels, which a small number of factories, and a few vessels, and the country is inhabited by the descendants of Spaniards. Its government still preserves republican forms. The capital, Bahia, or Villa del Parana, which is situated on the eastern banks of the river Paraguay, is an extensive town, on a flat, gently-sloping cliff, whence it derives its name, and is the seat of the government.

4. Corrientes comprehends the northern portion of the peninsula formed by the two rivers Parana and Uruguay, and includes about 250,000 square miles. The principal productions are sugar, cotton, and tobacco; but these articles are only exported to a small amount. Rice and indigo are also grown. Within this state is the lake of Ybera. It was formed by the Rio Parah, and the country is inhabited by the native country of that once numerous tribe of aborigines.

5. Cordoba, the most important of the states, next to Buenos Ayres, comprehends the Sierra de Cordoba and the surrounding hilly country, with some adjoining plains. It is divided by the Gran Salina from Santiago, Catamarca, and Jujuy, and by a mountain, or desert country overgrown with thorny vegetation. This state is divided into two districts, one inhabited by the Guarani, and the other inhabited by the native country of that once numerous tribe of aborigines. It contains the capital, Cordoba, which is situated near the Rio Paraná, and is connected with the other states by means of a few narrow passes. It is a very fertile province, and is divided into two districts, one inhabited by the Guarani, and the other inhabited by the native country of that once numerous tribe of aborigines.

The coast of the United States, however, is too long and too rich to be fortified by any number of forts, or other public works. It is necessary to have some in the neighborhood of the principal harbors, and some in the interior of the country, for the security of the commerce, and for the protection of the inhabitants.
maize and fruits are raised there in abundance, but the plains, as well as the declivities of the mountains, are only fit for pasture. Cattle and sheep constitute the principal wealth of the republic; hides and wool are exported to Buenos Ayres. Cordova, the capital, is built on the banks of the Rio Primero, is of brick, but not of great beauty. It is a general seat of the government, and has a population of 14,000 inhabitants. The streets are regularly laid out, and the houses are built of brick, and better than in other towns in the interior; most of them have balconies. In the centre of the town is a spacious square, on one side of which is erected the cathedral, and on the other, a university erected by the Jesuits, which in former times was famous, but is now hardly better than a provincial college. This town was formerly the depot of the European merchandise intended to be sent to Peru, but this branch of commerce no longer exists. The commercial connections of Cordova do not extend beyond Buenos Ayres. Alta Gracia; a neat town near the base of the Sierra de Cordova, contains about 500 inhabitants.

6. Santiago is of great extent, comprehending the western part of the Gran Salina, the country between the Rues Dolce and the Rio Salado, south of 27° 30', and also a large tract of the mountain-ranges of the Sierra de Aconcagua river. But the good land is of comparatively small extent, and a almost entirely limited to a narrow tract along both sides of the Rio Dolce, and a still smaller tract on the banks of the Salado. Though the soil is sandy, it has great fertility in the small valley, through which the river runs, producing a plentiful crop of wheat and some good grass. Where it is not cultivated, it is mostly covered with large trees. In the desert which surrounds the cultivated tract that species of cactus on which the cochinilla insect lives is abundant, and a considerable quantity of cochineal (from 8000 to 10,000 lbs. annually) is sent to Peru and Chile. Some districts have good pastureage. The inhabitants, among whom are large numbers of Spaniards and other white inhabitants, are industrious, and manufacture ponchos (cloaks) and coarse sable-cloths or blankets. Some soda is extracted on the borders of the Great Salina from the salola. This country is considered the hottest in South America. Santiago del Estero, on the right bank of the Rio Dolce, has about 4000 inhabitants, and exports cochineal and ponchos to Tucuman and Peru. Matara is a small place on the Rio Salado, where it begins to be navigable.

In the south of the Guadalcanal, the southern division of the country, are the greatest part of the semi-arid plains which extend from the base of the Sierra de Aconcagua towards the Rio Salado, but does not reach its banks, being separated from them by a broad tract of desert and mountains, which constitute a great portion of the extensive province of San Juan. The town of Aconcagua is from 22 to 26° S. lat., and contains about 5000 inhabitants, which is the northern district of the province of Tucuman, and the point at which the eastern province of the province of Salta begins. It is a healthy place, and is inhabited by 9000 persons. The most fertile part of the province is the fertile Pastaza, in the republic of Bolivia, and is divided from them by the desert table-land of Yavi and the range called Abara de Cortaderas. It comprehends the Despoblado, whose climate resembles that of Siberia; the valley of the river Pastaza, through which runs the Atlantic, and in certain aspects represents Europe; and the Plain of Saltas and the valleys of the Rio de Jujuy and Lavayen, which in both respects resemble the West Indies. Its commercial products consist of tobacco, sugar, and cotton. A great part of the land is covered with scrub, and is without many trees. The province, in a very lean state, acquire strength in the rich pastures of Saltas, and are sent to Peru and Bolivia, and this traffic is one of the principal sources of wealth to the inhabitants. The mountains contain gold, silver, copper, and other metals, but these mines are little worked. Salta, the capital, is situated in a plain about ten miles wide and forty long. The streets are regular, but narrow, and the houses of brick. In the central part of the town are the government-house, the cathedral, and several public buildings. The population is estimated at 8000 or 9000. The commerce is not considerable. Jujuy is built in an extensive tract of high mountains, on the banks of the Rio de Jujuy, an affluent of the Lavares; it contains about 4000 inhabitants, and has some traffic, as the carriage-road leading to Bolivia terminates at this place, and the goods must be transported farther north on mules. At this place, the Jujuy begins one of the most interesting regions in the world. A narrow valley extends from the town to the summit of the range called Abra de Cortaderas, a distance of 50 miles by the road. The highest summit of this road appears to have an elevation of between 18,000 and 12,000 feet. Oran is a small town on the Rio de Tarija, about 30 miles above its junction with the Rio Lavayen. At this place the river navigation is said to commence. Some years ago the inhabitants of Jujuy made an attempt to establish a gold mine in that region. In the year 1814 the provincial government of Salta. We do not know how far this attempt has succeeded.

9. Catamarca comprehends the country between the mountain-ranges of the Sierra de Aconcagua and Salada, on the east, and the Andes on the west, which is very little inhabited. It consists of some valleys, running between mountain-ranges south-east and north-west, and terminating, at their southern extremity, on the borders of the Gran Salina, being thus separated from the other inhabited countries by high mountains and deserts. The rivers which water these valleys are lost in the Gran Salina. The climate is sultry, and especially so when the south wind blows, which come over the desert. It appears that maize and wheat are raised to a considerable extent, but cannot be exported over the mountains. It sends only cotton and red pepper to the adjacent countries, the latter chiefly to Peru. The capital is Catamarca, whose population is stated to be 4000. The first capital was called London, being founded at the time when Philip II. of Spain married Queen Mary of England. It is not known if that place is still inhabited.

10. Rioja comprehends the country between the Gran Salina and the Andes, from 28° to 31° S. lat., and consists of a narrow strip of cultivable land along the eastern base of the Sierra Velasco, and the two valleys of Famatina and Guadalcanal. Rioja is a pastoral tract extending round the southern extremity of the Sierra Velasco must be added. The silver-mines of Famatina are very rich, but being situated above the line of vegetation, they are worked on a small scale. On the northern side of the province is the Rio Salado, which has a very fine view of the Andes, towards the east of the Sierra Famatina are fit for agriculture. The state is divided into four departments, of which that lying east of the Sierra Velasco is called Araxaco, and produces wheat, maize, and cotton. Its principal wealth is its vineyards. About 7000 barrels of wine, of sixteen gallons each, and 100 of brandy, are annually made, nearly the whole of which is exported. The capital, which is also that of the whole state, contains between 3000 and 4000 inhabitants, and has many substantial houses. The department of Famatina, which is included between the Sierra Velasco and Sierra Famatina, contains rich orchards in its northern districts, and exports some wine. The department of Guadalcanal lies between the Sierra Guadalcanal and the Andes, and produces very rich crops of wheat. It is inhabited by aborigines, who hunt the vicuña in the adjacent mountains. The wool of the vicuña is the only article of export. The fourth department is called the Llanos, which is a desert plain, containing a great number of large stray sheep, on which there are cattle-farms. It is stated that 16,000 head of cattle are exported annually. 11. San Juan extends along the eastern declivity of the Andes, from 30° to 33° S. lat., and the northern part of the Vale of Usupalata and a large portion of the plain which separates the Paramilla range from the mountains of Cordova. The Vale of Usupalata is bare and nearly uncultivated. The soil of the plain consists of small grassy conical hills, surmounted by prickly trees of the mimoa kind. It is quite barren, and produces no kind of grain or vegetables, except where it is irrigated.
by the sweet water of the Rio de San Juan and some of its minor affluents. This irrigation renders the land exceedingly fertile; without any other manure, they produce most plentiful crops of wheat and Indian corn. The ordinary crops of wheat are fifty for one, in better lands forty or a hundred for a few winters. Even a few hundred acres are capable of being two hundred and even two hundred and forty. The distance from a market and the difficulties attendant on the transport of heavy goods through desert plains, greatly diminish the value of these facilities. But as fruit-trees, especially vines, succeed very well in this soil, wines and brandies are exported to a considerable amount. This country contains the chlamyphorus. [CHLAMYPHORUS.] In the northern district, called Jachal, there are extensive gold-mines, whose produce is not exported. That of San Juan, on the banks of the Rio de S. Juan, is stated to have a population of 8000. It is the entrepôt of the wines and brandies which are sent to the other provinces.

12. Mendoza extends from 32º S. lat. to the old boundary-line (35º S. lat.), along the foot of the Andes, and includes the southern part of the Vale of Uspallata and the whole of that of Tunuyan. It contains the volanoeans of Aconcagua, Maypu, Rancagua, and Petorca, and the Andes are here crossed by the most frequented roads which lead over the mountain-passes of Uspallata, Portillo, and Las Damas. The valleys of Uspallata and Tunuyan are barren and nearly uninhabited. The plain which stretches from the Andes as far as the Atlantic, does not yield abundant crops of wheat, nor even grass, without irrigation, but when irrigated it yields abundant crops of wheat, Indian-corn, and lucerne; the lucerne may be cut fourteen times in a year. Rain and drought except in these districts do not in any way affect the banks of the Rio Diamante, where the rains are so abundant that corn may be raised without artificial irrigation, but agricultural settlements have only been established lately in this district. The vineyards and plantations of fruit-trees are extensive. The produce of this country is partly sent to the states farther east, and partly to Chile, as the following table shows:

<table>
<thead>
<tr>
<th>Location</th>
<th>Grapes</th>
<th>Wine (Bottles)</th>
<th>Corn &amp; Hides</th>
<th>Soap</th>
<th>Tallow</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buenos Ayres</td>
<td>335</td>
<td>2144</td>
<td>299</td>
<td>1919</td>
<td>1098</td>
</tr>
<tr>
<td>San Luis</td>
<td>90</td>
<td>70</td>
<td>458</td>
<td>1634</td>
<td>66</td>
</tr>
<tr>
<td>Cordova</td>
<td>95</td>
<td>95</td>
<td>335</td>
<td>122</td>
<td>25</td>
</tr>
<tr>
<td>Santa Fé</td>
<td>81</td>
<td>81</td>
<td>172</td>
<td>469</td>
<td></td>
</tr>
<tr>
<td>Chile</td>
<td>12</td>
<td>12</td>
<td>870</td>
<td>571</td>
<td>88</td>
</tr>
</tbody>
</table>

In this table the dried fruits are omitted, as well as the mules. The dried fruits consist of figs, peaches, apples, nuts, and olives. They go mostly to Chile, whither also from 300 to 600 mules are annually sent. Mendoza, the capital of the state and the centre of its commerce, is situated at the foot of the Andes, 4891 feet above the level of the Atlantic, in a country irrigated by numerous cuts from the Rio de Mendoza. It is a neat and pleasant town; the houses are only one story high, and have porticos. The climate is dry and noted for its salubrity. The population may amount to 12,000. San Martin, or Villa-nueva, west of Mendoza, is a thriving place, with 5000 inhabitants.

13. San Luis comprehends that immense tract of country which extends between the state of Mendoza on the west and that of Cordova on the east. Its northwestern part runs northward to the boundary of Rioja and the border of the Great Salinas, and it reaches southward to the old boundary-line (35º S. lat.). No part of it possesses any considerable degree of fertility. The greatest number of the widely-scattered and isolated settlements, consisting mostly of cattle-farms, occur along the road leading from Buenos Ayres to Cordova, in this part of the country, where tracts of grassy land alternate with ridges of hills and sand deserts overgrown with mimosa. As the grass is coarse and long, the pastures are indifferent; still cattle, horses, mules, and sheep (50,000 at least), and exported to a small amount, together with some wool. The climate is hot and malarial, which are raised are not sufficient for the consumption of the scanty population. The country between the Sierra de Cordova on one side, and Mendoza and San Juan on the other, is still worse. As no fresh-water stream runs through it, it cannot be irrigated, and, with the exception of a few spots on the Rio de San Luis de la Puntita, the capital, is a poor village-like town, with 1800 inhabitants.

The countries within the boundaries of the Argentine Republic which are not included in the territories of any of these thirteen republics, occupy perhaps one-fourth of its area. They are all bounded by the Desert, and on the south, the whole tract south of the old boundary-line, with the exception of that portion which, by a decree of the junta of Buenos Ayres, has lately been appropriated by the republic; that country, as it consists of various arid, semi-arid, and desert-like countries, are, with few exceptions, nomadic tribes, there are no towns. But the Spaniards have formed a settlement on the Caso Lebú, called Nuestra Señora del Carmen. It is built on the northern banks of the river, about fifteen miles from its mouth. The houses are small and irregularly placed. The population consists of about 2000 persons, of whom 500 are negroes. It has some commerce with the tribes of the Puelches, who live on the plains west of the town. Carmen sends a representative to the junta of Buenos Ayres. To keep the Indians who live on this large plain in due restraint, and to prevent them from invading the white settlements, the government of Buenos Ayres has established two lines of fortifications. A few forts have been built, and fortified lines extended along the frontiers, where there is an easy passage over the river. The other line of forts runs along the western boundary-line of the state of Buenos Ayres, from the Bahía to the Fort of Mendoza, and from thence to the city of Catamarca. The settlements which lie to the east of it. But no line of forts protects the inhabitants of San Luis against the invasion of the native tribes.

Manufactures.—The most important branch of manufacturing industry is that of ponchos, or oblong square pieces of woolen cloth, with a hole in the middle, to pass the head through; they are used by the gauchos and other people as cloaks. The finest are made of vicuña skins, in the town of Santiago del Estero. Some women wear the poncho, and men's women's dresses are also made, as well as saddle-cloths. In some parts some coarse cotton-cloth was formerly made by the country-people for their own use, but this branch of domestic industry has been nearly abandoned since the introduction of British manufactures.

Commerce.—The internal commerce of the states is considerable, as most of them have some products which are either not at all or only to a small amount raised in the neighboring states of the Central Confederation. Thus the copper mines of Catamarca, and the wines and brandies of Rioja, San Juan, and Mendoza, are transported from the places where they are grown, to the states which are most distant from them. Under the new dominion great numbers of mules (60,000) were annually sent to Peru and Bolivia, but at present the number exported to those countries appears to be small. The commerce by land with Chile is not considerable, being almost limited to the exports of the state of Mendoza, which have been already noticed.

The maritime commerce of these countries, while they were under the sway of Spain, was not great. The official valuation of the average imports from 1792 to 1796, inclusive, did not exceed 2,666,734 Spanish dollars (3,256,300£), though every article was sold at an exorbitant price. Since these countries have obtained their independence, and have been accessible to the vessels of all nations, the imports have increased so much that, at the comparatively low prices at which articles are now sold in those countries, their value in peaceable years amounts to about 7,000,000 dollars (1,375,000£). But this commerce has experienced great interruptions and vicissitudes. Between 1821 and 1823 it was at its highest point, and the most flourishing period in its history. Under the new dominion great numbers of American mules (60,000) were annually sent to Peru and Bolivia, but at present the number exported to those countries appears to be small. The commerce by land with Chile is not considerable, being almost limited to the exports of the state of Mendoza, which have been already noticed.
In the following years the value of the imports increased considerably; but after the Brazilian blockade, when Monte Video began to share this trade with Buenos Ayres, it decreased to the above-stated amount of about seven millions, which diminution however may partly be attributed to the political disorganisation which has prevailed up to the present time.

The goods imported from Great Britain into Buenos Ayres consist of cotton cloth, plain and printed calicoes, linens, woollens, and silks; and besides hardware and cutlery, coarse and fine earthenware, glass, iron and steel, leather, tin and pewter wares, and tin plates, arms and ammunition, are a numerous class of minor articles. French imports superface cloth and linens, merinos, cashmeres, silks and cambrics, lace, gloves, shoes, silk stockings, looking-glasses, fans, combs, and jewellery. From Germany are imported cloth, linens, and cottons; from Holland, cloth, linens, tin, butter and cheese, and Westphalia hemp; from Belgium, arms, especially swords and pistols; and from Sweden, iron, cordage, canvas, pitch, tar, and deals are imported. From the Mediterranean, Sicilian and Spanish produce are sent, of which the most important are the cheap red wines of Sicily, the common wines of Catalonia, brandies, olive oil, macaroni, and dried fruits. They were formerly brought by British vessels from Gibraltar, but are now mostly carried in Spanish ships from Spain and imported some serges and silks, velvets, and Spanish stuff. Formerly great quantities of paper were brought from Spain, but that article is now sent from Genoa. From the United States of North America are imported spirits, soap, spern candles, dried and salt provisions, tobacco, furniture, and deals. Some years ago great quantities of flour and coarse unbleached cotton-cloth were imported from these parts, but very little is now brought. Brazil sends to Buenos Ayres tobacco, sugar, coffee, and rice; and a great quantity of the mate, or Paraguay tea, of an inferior description. From China are brought in British vessels tea, silks, crape, nankeens, wearing-apparel, tortoise-shell, earthenware, matting, and some minor articles. Havanna sends to Buenos Ayres sugar, coffee, and tobacco.

**Exports from Buenos Ayres in 1822, 1829, and 1837.**

<table>
<thead>
<tr>
<th>Articles</th>
<th>Value in 1822</th>
<th>Value in 1829</th>
<th>Value in 1837</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silver, coined and bullion</td>
<td>1,115,158</td>
<td>291,172</td>
<td>277,791</td>
</tr>
<tr>
<td>Gold, coined and bullion</td>
<td>204,540</td>
<td>631,783</td>
<td>200,157</td>
</tr>
<tr>
<td>Copper</td>
<td>2,291</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ox hides</td>
<td>3,419,196</td>
<td></td>
<td>3,993,540</td>
</tr>
<tr>
<td>Horse hides</td>
<td>621,066</td>
<td>96,844</td>
<td>30,646</td>
</tr>
<tr>
<td>Jerked beef</td>
<td>305,652</td>
<td>229,589</td>
<td>464,192</td>
</tr>
<tr>
<td>Hogs</td>
<td>510,130</td>
<td>90,000</td>
<td>257,973</td>
</tr>
<tr>
<td>Horsehair</td>
<td>114,411</td>
<td>110,046</td>
<td></td>
</tr>
<tr>
<td>Sheep</td>
<td>31,817</td>
<td>39,384</td>
<td></td>
</tr>
<tr>
<td>Chickens</td>
<td>36,905</td>
<td>32,125</td>
<td>12,288</td>
</tr>
<tr>
<td>Blackbirds</td>
<td>29,683</td>
<td>24,326</td>
<td></td>
</tr>
<tr>
<td>Tallow</td>
<td>124,829</td>
<td>65,251</td>
<td>150,723</td>
</tr>
<tr>
<td>Salt</td>
<td>2,912</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cotton</td>
<td></td>
<td>1,906</td>
<td>480</td>
</tr>
<tr>
<td>Sheep-skins</td>
<td></td>
<td>164,497</td>
<td></td>
</tr>
<tr>
<td>Furs</td>
<td></td>
<td>56,268</td>
<td></td>
</tr>
<tr>
<td>Gore</td>
<td></td>
<td>14,325</td>
<td></td>
</tr>
<tr>
<td>Sundries and other articles</td>
<td>118,290</td>
<td>121,867</td>
<td>186,318</td>
</tr>
</tbody>
</table>

Mules are occasionally exported to the West Indies and to the island of Mauritius. All the articles which occur in the above list are brought to Europe—except the jerked beef—by the Gore going to the Spanish West Indies, and Brazil: the corn and flour, which are exported to the last-mentioned country; and a considerable portion of wool and sheep-skins, which are carried to the United States of North America.

The average number of vessels which annually enter the port of Buenos Ayres is 240. In 1837 only 225 entered, and of this number 61 were British, 40 from the United States of North America, 43 from Brazil, 24 from France, 21 from the ports of the kingdom of Sardinia, 12 from Spain, 9 from Denmark, 7 from Hamburg, 4 from Sweden, 4 from Bremen, 2 from Portugal, and Tuscany, Holland, and Russia sent each one.

As the produce of the central and northern provinces is carried by land to Monte Video, and thence exported to foreign countries, we shall add the articles exported from that harbour, observing that the republic of Uruguay, of which Monte Video is the only commercial port, supplied probably less than one-fourth of the exported goods.

**Table of exports from Monte Video in 1836, showing the quantities of each article, and the countries for which they were shipped:**

<table>
<thead>
<tr>
<th>Commodities</th>
<th>Vessels</th>
<th>Entered.</th>
<th>Sailed.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sh.e.</td>
<td>No. of ships</td>
<td>Value of Car. in Spanish dollars</td>
<td>Value of Car. in Spanish dollars</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------</td>
<td>----------------------------------</td>
<td>----------------------------------</td>
</tr>
<tr>
<td>British</td>
<td>58</td>
<td>1,172,648</td>
<td>57</td>
</tr>
<tr>
<td>Brazilian</td>
<td>60</td>
<td>713,733</td>
<td>48</td>
</tr>
<tr>
<td>French</td>
<td>48</td>
<td>476,178</td>
<td>46</td>
</tr>
<tr>
<td>Spanish</td>
<td>15</td>
<td>311,285</td>
<td>10</td>
</tr>
<tr>
<td>Sardinian</td>
<td>9</td>
<td>102,039</td>
<td>40</td>
</tr>
<tr>
<td>Portuguese</td>
<td>15</td>
<td>18,200</td>
<td>10</td>
</tr>
<tr>
<td>Other countries</td>
<td>350,882</td>
<td>836,950</td>
<td>10</td>
</tr>
</tbody>
</table>

**More copious particulars on the commerce of the Argentine Republic are given in Sir Woodbine Parke's valuable book on Buenos Ayres and the provinces of the Rio de la Plata, from which these statistical facts are taken.**

**History.**—Though Amerigo Vespucci sailed along the coast before the end of the fifteenth century, it does not appear that he observed the wide estuary of the Rio de la Plata. It was discovered by Juan Diaz de Solis, who was sent to these parts in 1512, by the Spanish government, and he took possession of it, but did not form a settlement.

Sebastian Cabot was sent from Spain, in 1539, to make discoveries in South America. He traversed the La Plata, and following the course of the Rio Paraná to its confluence with the Paraguay, sailed up the first-mentioned river, but being prevented from proceeding far by shoals and cataracts, he turned the Paraná and proceeded by a direct return, to a point above the place where Assuncion is situated. He built also a small fort at the place where the Rio Tercero, or rather the Carcaraquén, joins the Paraná (32° 30' S. lat.), which he called Santo Spiritu, which however was destroyed by the Indians soon after his departure. The favourable account that he gave of the country called Paraguay induced the Spaniards to send a considerable force to those parts under the Adelantado Don Pedro de Mendoeza, in 1534, who built a fort near the spot on which the town
of Buenos Ayres now stands; and he then sailed to Paraguay to found the town of Asuncion. The fort was soon destroyed by the Indians. The Spaniards concentrated their forces in Paraguay, and from thence they gradually began to establish their settlements over the country.

The town of Buenos Ayres was founded by Garay in 1580. He built a fort sufficiently strong to repel the attacks of the Indians. All the countries thus conquered were joined to the Spanish crown, but only a portion of which was held until 1777, when Buenos Ayres was divided from it, and constituted a separate viceroyalty. In the seventeenth century the Jesuits entered the country for the purpose of civilising the Indians and converting them to Christianity. Their progress was at first slow, but after the year 1692, when they obtained more extensive privileges, the conversion and civilisation of the Guaranis, who inhabited both banks of the Paraguay, and the middle of the last century it was stated and believed that the Jesuits had succeeded in forming a powerful state. On the suppression of the Jesuits in 1768, it was found that the country was inhabited by about 100,000 Guaranis, and by 1815 to 170,000 Guaranis. Since that time the missions, as they are called, have rapidly decreased in population. At present the number of the inhabitants is stated to be 8000. Though the attempts to civilise and convert the Indians in the northern provinces were attended with great success, the Spaniards had suffered less from their incursions than from the attacks of the southern tribes, who, from the time they had obtained horses, adopted the habits of the Mongols and other nomadic nations of Asia, and by their unexpected incursions laid waste the neighbouring Spanish settlements, and drove off their herds of cattle. If these natives had submitted to the orders of the hereditary chiefs, like the Guaranis, it is believed that the Spaniards would have expelled the whites from the plains and confined them to the mountainous regions. The Spaniards tried all means to bring about a pacification, and they partly succeeded in 1740, when the course of the Rio Salado of Buenos Ayres and the parallel of 35° S. lat. were agreed upon as the boundary between the southern Indians and the Spanish settlements.

In 1595 the town of Buenos Ayres was taken by the British, but they were soon expelled. The inhabitants of the town, who had been numerous, like those of other Spanish colonies, did not submit to the authority of Joseph Bonaparte, and, in 1810, they organised an independent government in the name of King Ferdinand VII. But after Ferdinand's deposition of Spain, the disturbances resulting from the American colonies created such disgust, that the states united and declared their independence in the town of San Miguel de Tucuman, the 9th of July, 1816; and in 1819, a federal government was projected, but the states refused to accede to it because they were made dependent on the federal government. At the same time disunion and civil war broke out, which were attended by a rapid succession of political changes. The provincial government of Buenos Ayres underwent changes between the 10th of November, 1819, and the end of January, 1821. In 1821 the government seemed to have acquired some consistency, at least at Buenos Ayres. But the ascendency which had been acquired in the province of Buenos Ayres, from the loss of Paraguay, was again disturbed by other revolutions after the conclusion of peace (1829), which continued until 1836, when Rosas was created dictator for life. At present the French have declared war against Buenos Ayres, and are blockading the port.

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M. Miélot ‘Travelled in Chile and Peru, and Drawn the Beaufort's *Travelns in Buenos Ayres, &c.;* Parish's *Buenos Ayres and the Provinces of the Río de La Plata;* Robertson's *Letters on Paraguay;* Surveying Voyages of the Adventure and Beagle.* 


PLATE A, or PLATA A, was a city of Bautia under the bridge of the Apurimac, about 600 miles, or rather more than 10 miles, south-west of Thebes. The river Apurimac between, at nearly an equal distance from each. The Bautians, who migrated from Arne in Thessaly, did not colonise Peru until after the fall of Tucuman, and Cordova, about the same time that Garay built Santa Fé. The town of Buenos Ayres was founded by Garay in 1580. He built a fort sufficiently strong to repel the attacks of the Indians. All the countries thus conquered were joined to the Spanish crown, but only a portion of which was held until 1777, when Buenos Ayres was divided from it, and constituted a separate viceroyalty. In the seventeenth century the Jesuits entered the country for the purpose of civilising the Indians and converting them to Christianity. Their progress was at first slow, but after the year 1692, when they obtained more extensive privileges, the conversion and civilisation of the Guaranis, who inhabited both banks of the Paraguay, and the middle of the last century it was stated and believed that the Jesuits had succeeded in forming a powerful state. On the suppression of the Jesuits in 1768, it was found that the country was inhabited by about 100,000 Guaranis, and by 1815 to 170,000 Guaranis. Since that time the missions, as they are called, have rapidly decreased in population. At present the number of the inhabitants is stated to be 8000. Though the attempts to civilise and convert the Indians in the northern provinces were attended with great success, the Spaniards had suffered less from their incursions than from the attacks of the southern tribes, who, from the time that they had obtained horses, adopted the habits of the Mongols and other nomadic nations of Upper Asia, and by their unexpected incursions laid waste the neighbouring Spanish settlements, and drove off their herds of cattle. If these natives had submitted to the orders of the hereditary chiefs, like the Guaranis, it is believed that the Spaniards would have expelled the whites from the plains and confined them to the mountainous regions. The Spaniards tried all means to bring about a pacification, and they partly succeeded in 1740, when the course of the Rio Salado of Buenos Ayres and the parallel of 35° S. lat. were agreed upon as the boundary between the southern Indians and the Spanish settlements.

In 1595 the town of Buenos Ayres was taken by the British, but they were soon expelled. The inhabitants of the town, who had been numerous, like those of other Spanish colonies, did not submit to the authority of Joseph Bonaparte, and, in 1810, they organised an independent government in the name of King Ferdinand VII. But after Ferdinand's deposition of Spain, the disturbances resulting from the American colonies created such disgust, that the states united and declared their independence in the town of San Miguel de Tucuman, the 9th of July, 1816; and in 1819, a federal government was projected, but the states refused to accede to it because they were made dependent on the federal government. At the same time disunion and civil war broke out, which were attended by a rapid succession of political changes. The provincial government of Buenos Ayres underwent changes between the 10th of November, 1819, and the end of January, 1821. In 1821 the government seemed to have acquired some consistency, at least at Buenos Ayres. But the ascendency which had been acquired in the province of Buenos Ayres, from the loss of Paraguay, was again disturbed by other revolutions after the conclusion of peace (1829), which continued until 1836, when Rosas was created dictator for life. At present the French have declared war against Buenos Ayres, and are blockading the port.

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The process of purifying platina and of rendering it malleable is one of considerable complication and difficulty, and it is one which our space will not permit us to detail; we therefore merely refer to the late Dr. Wollaston's extremely interesting paper on the subject, contained in the 'Philosophical Transactions' for 1829.

The following are the properties of pure platina:—its colour is greyish-white, intermediate between silver and tin. When it is free from iridium, it is so very ductile, that it may be drawn into very fine wire, not exceeding the 2000th part of an inch in diameter; it is also very malleable, and may be beaten into thin leaves. According to Berzelius, when perfectly pure, it is softer than silver, and is susceptible of receiving a fine polish. Of all metals it is the least expansive. Its density varies: when fused, it is 19.56; when forged, it is as high as 21.4 to 21.5.

Platina suffers no change by exposure to the air, nor is it oxidized when heated in it. It does not undergo any circumstances decompose water. It is infusible in the strongest heat of a smith's forge, but it may be melted by voltaic electricity or by the oxyhydrogen blowpipe. Of all metals, except iron and copper, it is the most tenacious; a wire of the diameter of 0.0737th of a line is capable of sustaining a weight of about 274 pounds. Like iron, platina possesses the very valuable property of welding at a high temperature, and this enables us to form it into chemical vessels of great and daily use.

Oxygen and Platina, it follows from what has been already stated, have but little affinity for each other. It is not acted upon, and consequently is not oxidized, by the agency of air whatever; but when it is treated with nitro-hydrochloric acid (aqua regia), it is converted into a chloride, and when the protochloride is digested with heat in a solution of potash, a black oxide, or protoxide, is formed, part of which is dissolved by the excess of alkali, and part is precipitated; when sulphuric acid is added to the alkaline solution to saturation, the oxide of platina which it held in solution is precipitated of a greenish colour. It is a hydrate, which, when heated, first loses water and afterwards oxygen, and is reduced to the metallic state.

Protoxide of Platina is nearly black, very bulky, and has a good deal the appearance of charcoal. It decomposes readily and even with detonation at a heat below redness. It is soluble in sulphuric acid, and the nitric acid, and hydrochloric acid, and in its nascent state some vegetable acids dissolve it. It is easily reduced by combustible bodies. The salts which it forms with acids are but little permanent, it being separated readily into metallic platina and peroxide.

It consists nearly of-

| Oxygen equivalent of platina | 8

Equivalent... 106

Sesquioxide of Platina.—According to Mr. E. Dury, when sulphate of platina is decomposed by ammonia, and the precipitate boiled in a weak solution of potash, and then cautiously dried, dissolubilating platina is formed, which, when treated with nitric acid, leaves a grey powder, which is a sesquioxide, composed of-

| One and a half equivalents of platina | 12

Equivalent... 110

It is also stated that this oxide may be obtained by heating spongy platina with potash, and then treating the residue with dilute nitric acid.

Bromide of Platina may be prepared by precipitating subnitrates or nitrate of platina with potash, and keeping the portions separate. The first is a hydrate of the peroxide, and the last a salt. The hydrate is to be moderately heated with alcohol; between the oxygen and the hydrate of this oxide is yellow, but when the water is expelled it becomes black.

It combines with most acids, and forms salts, which are brown or red; it has however a greater tendency to combine with alkalies and oxides than with acids.

It is composed of-

| Two equivalents of oxygen | 16

One equivalent of platina | 98

Equivalent... 114

Chlorine and Platina do not act upon each other, unless the chlorine be in the nascent state, for if the metal be exposed to the atmosphere at red heat, or in solution in water, no action takes place between them, but the protochloride remains. This chloride is green, unalterable in the air, insoluble in water, or in sulphuric or nitric acid, but hydrochloric acid partially dissolves it, and the solution is red. At a high temperature it is totally decomposed, the chlorine being expelled, and metallic platina left. The caustic alkalis, potash and soda, decompose it, and separate protoxide of platina, which dissolves in an excess of the alkalis, and yields a deep green-coloured solution.

It is composed of—

| One equivalent of chlorine | 36

One equivalent of platina | 98

Equivalent... 134

Bichloride of Platina is obtained by evaporating a solution of platina is nitro-hydrochloric acid to dryness at a very gentle heat, when it remains as a red hydrate, which becomes brown when the water is expelled. This salt is deliquescent; very soluble in water, alcohol, and water; the solutions which it forms are of a pure yellow colour; light decomposes them, metallic platina being deposited. When the solution contains excess of hydrochloric acid, orange-yellow crystals are obtained, which are considered as hydrogen of the chloride; by exposing the residue to a moderate degree of heat, the bichloride becomes protochloride, and at a red heat it is totally decomposed, chlorine being expelled, and metallic platina left.

It is composed of—

| Two equivalents of chlorine | 72

One equivalent of platina | 98

Equivalent... 170

Bromide of Platina is obtained by dissolving platina in a mixture of hydrobromic and nitric acids. It is of a reddish-brown colour and becomes a crystalline mass by evaporation. It is decomposed by heat. It is probably a biformide, composed of—

| Two equivalents of bromine | 156

One equivalent of platina | 98

Equivalent... 251

Carbon and Platina have lately been combined by Zeise; they form a black powder, which is composed of—

| Two equivalents of carbon | 12

One equivalent of platina | 98

Equivalent... 110

 Sulphur and Platina form two compounds: the Protosulphuret of Platina may be formed by several processes, as by heating those elements together in an exhausted glass tube, or heating the ammonio-chloride of platina with half its weight of sulphur until the hydrochlorure of ammonia and excess of sulphur are entirely expelled ; or by adding hydrogen sulphuret to protochlorure of platina. It is a grey or blackish powder of metallic lustre, unaltered by exposure to air or water, and scarcely attacked even by boiling acids, but is decomposed when ignited with chlorate of potash. It consists of—

| One equivalent of sulphur | 16

One equivalent of platina | 98

Equivalent... 114

Sulphuret of Platina is procured by mixing a solution of subbrenuret of potash and solution of chloride of platina; the precipitated sulphuret is a black powder, which is to be dried in vacuo over sulphuric acid.
When it is exposed to dry on paper in the air, the sulphur absorbs oxygen, and becomes sulphuric acid, which acts upon and chars the paper.

It is formed of—

Two equivalents of sulphur 32
One equivalent of platina 98

Equivalent 130

Phosphur of Platina is prepared by subjecting spongy platina to the action of phosphorus: it is hard, brittle, of a silvery white colour, has a crystalline fracture, and is more fusible than silver; it is partially decomposed by heat, and completely so by roasting.

Iodine and platina may be combined.

Protidode of Platina is obtained by decomposing a solution of the protochloride, with one of iodide of potash; after the mixture has been for some time heated, a bluish, heavy, finely divided precipitate is obtained, which adheres to the fingers like charcoal; it has neither taste nor smell; it is unalterable in the air, and neither water nor alcohol acts upon it at any temperature. It may be heated to above 468° Fahr. without decomposing, but at the heat of boiling mercury, the vapour of iodine begins to rise, and at a still higher temperature it is entirely decomposed, spongy platina remaining. It is not acted upon by acids even when heated, but it is gradually decomposed by a solution of potash or soda.

It is composed of—

One equivalent of iodine 126
One equivalent of platina 98

Equivalent 224

Bi-iode of Platina is readily formed by mixing solutions of iodide of potassium and bichloride of platina; a crystalline black powder is precipitated on the application of heat, which, after washing with boiling water, is to be dried in vacuo over sulphuric acid or a water-bath. It is indoruous, insipid, and stains the fingers like the protidide, and is not acted upon by boiling water, but is decomposed at a temperature of about 268°. It is soluble in cold alcohol, but more readily so in hot, and the solution is of a greenish-yellow colour, and not decomposed by water. Cold sulphuric acid does not act upon it, but when they are heated together, a portion of iodine is expelled.

It is composed of—

Two equivalents of iodine 232
One equivalent of platina 98

Equivalent 350

Boruret of Platina is obtained by fusing spongy platina with boric acid and charcoal; the compound is hard, and slightly crystalline; when dissolved in aqua-regia, it yields chlorides of platina and boric acid.

Silicuret of Platina. Spongy platina combines with selenium, with the evolution of much heat; it is a grey powder, which, by exposure to heat and air is decomposed, the selenium evaporating, and the metal being left. Platina crucible is used for the decomposition of compounds of selenium, when the latter are heated in them.

Silicuret of Platina is formed when platina is heated with charcoal in an earthen crucible: the silicium is yielded both by the earthy matter of the crucible and of the crucible. A compound thus obtained was found by Berzelius to have a specific gravity of 1.33; it was granular and very hard; when put into aqua-regia, it was acted upon, and soon covered with a sufficient crust of silicium to retard the action of the solvent.

The principal binary compounds of platina and non-metallic elements having now been described, we shall give a brief account of the more important binary compounds which its forms with the metals, or the alloys of platina. Most metals combine with platina, but little is known of its compounds with the metals of the alkalis and earths. According to Berzelius, potassa has combined with platina and they unite at a high temperature. When the alloy is treated with water, it is decomposed, and black scales are formed, which are composed of hydrogen and platina.

Arsenic and Platina readily unite: an alloy formed of 20 parts of the former, and two of the latter is of a greyish-white colour, very brittle, fusible at rather above a red heat, is not acted upon by the air at common temperatures, but when it is heated it absorbs oxygen from the air, and is converted into arsenious acid, which is volatilized, and metallic platina remains. Jeannetty of Paris long employed this process for extracting platina from the native grains, and rendering it fit for crucibles, &c.

Antimony and Platina during combination evince much light. This alloy is very brittle, fine-grained, and hard. It is decomposed at a high temperature, the antimony being oxidized and expelled.

Zinc and Platina form an alloy of a greyish-blue colour; it is so brittle that it is easily reduced to powder. At a high temperature the zinc burns, and a large proportion, but not the whole of it, is volatilized.

Tin and platina yield an amalgam which is large-grained, brittle, and hard. The presence of a small quantity of platina is sufficient to destroy the malleability of tin.

Iron and Platina. Iron and steel render platina more fusible. Paradies and Stolart have examined the alloys of platina and steel, the metal amounts to only one per cent. The alloys which contained from 1 to 3 per cent. of platina seemed best adapted for cutting instruments. When equal weights of the two metals are combined, a fine, hard, brilliant alloy of specific gravity 19.652 is obtained; it takes a fine polish, does not tarnish, and appears to be well adapted for mirrors; when 80 parts of platina are combined with 20 parts of steel, the alloy has a specific gravity of 15.88.

Nickel and Platina, combined in equal weights, form a pale yellow alloy, susceptible of a high polish, and obedient to the magnet.

Cobalt and Platina form a fusible alloy.

Copper and Platina combine in all proportions, and form alloys which are ductile or brittle, yellow or white, according to the relative quantities used. The colour of copper is diminished by platina.

Bismuth and Platina form brittle alloys, which are not entirely decomposed by cupellation.

Silver and Platina form alloys in all proportions; their colour is intermediate as to that of the metals. They are fusible and ductile, if the silver be in the larger proportion. Take the alloy of platina, but iron, those of platina and silver are completely soluble in nitric acid, when there is a sufficient quantity of silver; they are also attacked by sulphuric acid, which dissolves the silver.

Lead and Platina readily combine with the evolution of light. The affinity of these metals for each other is great, so that if platina and lead foil be rolled together, and one end of the roll be ignited, the mass becomes so strongly heated that it is dissipated in all directions.

Mercury and Platina amalgamate with difficulty; it is effected by exposing spongy platina and mercury to a high temperature. Mercury, when the amalgam consists of 37 platina and 63 mercury, is at first soft, but becomes eventually hard and brittle.

Gold and Platina combine in all proportions, and form fusible alloys. Platina destroys the colour of gold, even when it constitutes only 0.02 of the weight of the alloy.

Friddium and Platina. This alloy is perfectly malleable when the former metal amounts to only one or two per cent.; it is much harder than pure platina, and resists the action of heat and chemical re-agents much better than mere platina, and is particularly adapted for chemical vessels. A large proportion of iron renders the alloy so brittle that it cracks under the hammer.

Salts of Platina, or oxysalts, consist of acids and the oxides of the metal: they are not numerous, and have been but imperfectly examined.

Salts of the oxide. These are of an olive-green or greenish brown colour, and they are soluble in an excess of alkali, which renders them green; they are not decomposed by hydrochloric of ammonia.

Salts of the hydride are yellowish-red or brownish-red; most of them are soluble in water, and perfectly decomposed at a white heat, leaving metallic platina; and there is thus obtained the metal in a finely divided state in which it is called spongy platina. These salts are precipitated by zinc, and, when heated, they appear to be reduced to platina of sulphur of platina with hydrosulphuric acid and hydrosulphates.

The alkalis decompose these salts but imperfectly, on account of the formation of double subsalts. Protoclorid of platina is formed in occlusion, but the combination becomes of a very characteristic and intense red colour.

Protosulphate of Platina is formed by adding the protoxide to the acid. It is a soluble salt, black or reddish.
and which eventually becomes converted into persulphate and metallic platina.

Protonitrate of Platina is obtained by dissolving the protoxide in nitric acid; its properties are similar to those of the protosulphate.

Persulphate of Platina is procured by treating the bisulphurated with nitric acid. It is black, and may be combined with the alkaline sulphates, and it yields insoluble double subsalts when decomposed by the alkalies.

Pernitrate of Platina is of a deep brown colour, and is prepared by dissolving the peroxide in the acid; by evaporation it is easily converted into a subsalt, and double subsalts are formed when it is decomposed by the alkalies.

A numerous class of double salts, called platino-chlorides, have no precipitate and examined; they are obtained by adding the chlorides of potassium, sodium, &c., and hydrochlorate of ammonia, to the chlorides of platina; some are soluble and others are insoluble in water.

Mr. Brodey gives the following statement of the Characteristics of the Salts of Platina.—The difficult solubility of the ammonio- and potassio-chlorides of platina, and the solubility of the corresponding sodium compounds, are very characteristic of this metal. Phosphatite of soda produces no precipitate in chlorides of platina; the ferrocyanide of potassium throws down the platino-chloride of potassium; cyanide of mercury occasions no precipitate; iodide of potassium communicates a reddish-brown colour to solutions of the chlorides of platina, and gradually produces a brown precipitate; and if the mixture be heated in a matrass, the glass acquires a strong coating of metallic platina.

All the metals which reduce the chlorides of gold, with the exception of palladium, act similarly upon chlorides of platina, but its complete separation in the metallic state is slow: iron, zinc, cadmium, and copper are its most effective precipitants; they separate it in a black powder, which sometimes adheres in films to the glass.

Tartrate of soda added to and heated with a solution of chlorides of platina is a very effective precipitant of metallic platina in a state of minute division and of a black colour; in this state it possesses a high degree the very remarkable power of causing syphotic and hydrogen gases to combine with detonation and the formation of water.

The uses of platina are numerous and important, but it is especially employed for forming vessels, not merely for chemical operations on the small scale, but for the concentration of sulphuric acid by manufacturers.

PLATINA. [PART II.]

PLATO (Πλάτων) was born, according to the most consistent accounts, on the 7th day of Thargelion, in Cl. 87, 3, that is in May, a. c. 429. (Plato, v. 217. B.) His father was Ariston, the son of Aristocles, and Plato is said to have been originally called after his grandfather, according to a custom very common among the Greeks. The old anecdotists collectors have thought it necessary to find some one else named Plato, which was the real name, by which he is now known, as for instance, that he was so called from the breadth of his style (διὰ τὴν πλατύτητα τῆς ἐρμηνείας), or from his expanded forehead (ὅτι πλατύς ἦν τὸ μέτωπον); but this seems quite idle, as in the Plato was of common occurrence among the Athenians of that time. The philosopher's mother was Perictione. The later writers attribute to her a lineal descent from Eccesides, the father of Solon, according to the following table:

<table>
<thead>
<tr>
<th>Excecestes</th>
<th>Solon</th>
<th>Droydies</th>
<th>Critias I.</th>
</tr>
</thead>
</table>

<table>
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<tr>
<th>Calliaschrus</th>
<th>Glaucon</th>
<th>Aristocles</th>
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<tbody>
<tr>
<td>Charmides</td>
<td>Perictione = Ariston</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

It seems doubtful, however, whether Solon and Droydies were really brothers; that they were intimate friends and connections appears from the words of Plato himself in the P. C., No. 1132.

Timeus (p. 20, Ee); but perhaps the claim of a direct descent from Excecestes originated only in later times, when the admirers of the great philosopher lost no opportunity of exalting his family and investing his early youth with the wonders of fable. It is also stated that he was born in the island of Rhodes, whence he returned, after being stripped of its inhabitants, and occupied by Athenian colonists (Ἀλεξάνδρος), among whom was Aristophanes, the comic poet.

As might have been expected from his connection with the most distinguished Athenian family, Plato received the best education that Athens could furnish: Dionysius taught him reading and writing (γραμματα); he was instructed in gymnastic exercises by an Argive wrestler named Arision: his masters in mathematics and Metempsychia were Draco and Draco of Athens, a pupil of the celebrated Damon. He was sufficiently skilled in wrestling to contend at the Pythian and Isthmian games, and his first literary attempts, the composition of dithyrambic poems, show that he had profited by the instruction of his musician masters. He is also said to have applied himself to painting.

Plato's connection with Socrates is said to have commenced in a. c. 410. He had previously, and while young, learned the doctrines of the Heraclitean philosophy from Cratylus (Aristot., Metaphys., i., c. 6: ιενο τον ζητητην κρατιν και τα βραδειατην δηκας; Αρισ- κλίττος, De Dogmat., i. 4: ακτεας προδεστης Μητηνος ἄνθητας). The assertion of Diogenes Laeritus (iii. 6) that he learned the Eleatic doctrines from Hermogenes seems to be derived from this statement with regard to Cratylus, and the circumstance that Hermogenes maintains the Eleatic opinions of Cratylus in the dialogue which bears the name of the latter.

On the death of Socrates (in May, a. c. 399), Plato betook himself to Megara, in company with several of his late master's followers. Related as he was to Critias and Charmides, who fell fighting side by side against Thrasybulus and his party, and professing, as he always did, sentiments harmonising rather with the elder than with Socrates, and from Greece to Athens than with those of the truer patriots who wished for a restoration of the older constitution under which Athens had so long and so pre-eminently distinguished herself, it cannot be doubted that he was driven to this self-blasphimation from a fear for his own safety; and we shall be the more inclined to draw this inference when we recollect how intimately the prosecution of Socrates was connected with that reaction against the Thibullists and the Lysians which in the days of the young Lyseus took so prominent a part. (Socrates.) We are not disposed to charge Plato, at this or at any other time of his life, with absolute treason against the liberties of his country; we are inclined however to hold with Niebuhr (Die Schriften Platon's, ii. 279): Plato and Megara were of course dependent on Athens, and Plato may have been prejudiced against his native city in its constitutional form of government by the warm feelings of his youthful heart; 'but it is not the less true,' adds the historian, 'that, if so, he was not a good Athenian.' While at Megara, he is said to have attended the lectures of Euclid, who was the head of a school there [Euclid], and we find traces in several of his dialogues of an acquaintance with the peculiar doctrines of the Megaric philosophy. He afterwards went to Cyrene, to visit Theodorus, the mathematician, who is introduced in the 'Thestetus' as living at Athens before the death of Socrates, and advocating the doctrines of Protagoras against that philosopher. From thence, we are told, he was recalled to Eryx, where he spent seventeen years, collecting all the traditions which the priests could teach him; and it is said that he afterwards went to Persia to learn the doctrines of the Magi, and even became acquainted with them (Plato, v. 217. B): and the story is not in itself improbable, especially if we admit the truth of his journey to Cyrene; it seems

* Critias is here made to say of Solon, ἢν τὸν σῶ τον ἰδίον καὶ σώφρον φιλὸν ὕπο νυμητήτου τοῦ πρώτου, = the scholar on the passage ἔγραψε, λέγοντας ὅτι τὸν ἅλυον καὶ τον εὐσκέον. Vol. XVIII.—2 H
however exceedingly unlikely that he resided there so long as thirteen years, for he never speaks of Egypt like a person who was familiarly acquainted with the peculiarities of the country. The most that can be said with certainty at Alexandria in later times, that a lie circumstantial, like that which Strabo relates, might easily have been fabricated on the spot. The other exaggerations with regard to Plato’s travels in the East are highly absurd, and can only be accounted for in the same manner as the lie circumstantial attributed to his philosophy by the early Christian writers, and by their wish to make out that the apparent coincidences between his system and the Christian revelation were not anticipations so much as proofs of the connexion of the tenets of the Pythagorean school with their own. There is probably more truth in the statement that, on his return from Egypt, he went to Tarentum to visit or renew his acquaintance with some renowned teachers of the Pythagorean school; he certainly did not go to London to learn the mysteries of this school; he might have learned them nearer home, for the celebrated Pythagorean Philolaus had been at Thebes before the death of Socrates; Cebes and Simmias heard him there (Cicero, De Fin., v. 29; Dog. Laert., vii. 46); and Plato shows in his earliest works that he was not unacquainted with the tenets of the Pythagoreans.

This journey to Magna Graecia seems to be connected with the first of three voyages which he made to Sicily. Some historical writers refer the visit of Plato to Sicily to the foundation of Mount Etna, which is said to have been the motive for this first voyage to Syracuse, which, it is stated, he undertook in the fortieth year of his age, therefore in B.C. 365. (Athens, xi., p. 507; B. Dion. Sid., xvi. 7; Plutarch, Apotheosis, p. 254, A). But it is possible that he became acquainted with Dionysius I., tyrant of Syracuse; with his son, Dionysius II.; and with Dion, brother-in-law of the former and uncle of the latter. He had the misfortune to offend the elder Dionysius by some freedom of speech; and the tyrant got Pollius, the Spartan ambassador, in whose ship he was returning to Greece, to sell him at Agrigum as a slave. He was bought by Anniemus of Cyrene, who gave him his freedom; and, on returning to Athens, he set up a school in the Academy, where he taught for twenty-two years. After this he paid a second visit to Syracuse, at the request of Dion, to endeavour to form by philosophic instruction the ill-educated mind of his nephew, the younger Dionysius. He failed in doing this; and Dion being banished soon after, Plato returned to Athens with the tyrant’s permission. This second journey is placed in B.C. 367, and Plato stayed four months in Sicily. His third journey to Sicily is placed in B.C. 361: it seems to have been undertaken in the hope of reconciling Dion and Dionysius. Plato’s stay at the tyrant’s court became disagreeable and dangerous to himself, and it was not without difficulty that he obtained permission to return again to Athens, which he was able to effect the following year. In B.C. 360 Dion collected an expedition in Greece for the purpose of liberating Syracuse from the tyranny of Dionysius: among the volunteers who joined this expedition was Speusippus, a nephew of Plato, who had joined the latter’s school. Dion succeeded in his object, but was soon after murdered (n. c. 353), and with his death Plato’s connection with Syracuse ceased.

Plato spent the last years of his life in the diligent prosecution of his philosophic and literary pursuits. Cicero tells us (De Senect., c. 5) that he was actually engaged in writing at the moment of his death. His lectures were at first delivered in the garden of the Academy itself, but after a while he was under necessity to take up his residence in the Athenian market-place, the Agora, and between it and the village Colonos. Plato died in Ol. 108, b.c. 347, and was succeeded as lecturer in the Academy by his nephew Speusippus, though he had left Heraclides of Pontus, another of his disciples, as his deputy there, when he had placed Speusippus with him on his second journey to Sicily.

The following is the list of his scholars as given by Diogenes of Laërtius:—Speusippus, Hippoletes, and Callippus of Larisa; Archelaus of Chalcedon; Heraclides of Pontus; Philippius of Opus; Hesittius of Perinthus: Dion of Syracuse; Amyc’us of Heraclea; Eratistas and Coriscus of Scepsis; Timias of Cyrene; Earn of Eumenes; Python and Heraclides of Amisus; and Heraclea of Magnesia, worshipped as a god at Athens. And he had to do with the Athenian orators Demosthenes, Hyperidias, and Lycurgus, and the philosopher Theophrastus. See also the contradictory lists of tyrants and good statesmen who proceeded from the school of Plato, in Athenæum, vi. p. 565, &c.; and Plutarch, Adv. Colot., p. 1126.

The works of Plato consist of a long series of dialogues, in all of which, excepting the 'Laws,' the principal interlocutor is Socrates. The form of the dialogue was not first introduced by Plato. He is said to have been preceded in that species of composition by Alexander of Teos and Proclus, and by one of the young men of Agenor (in the first book of his 'Treatise on Poets,' as quoted by Athenæum, xi., p. 565, C), says, 'We cannot deny the name of discourses and imitations to the mimes of Socrates and to the dialogues of the Socratean school,' which were called 'Socrates' dialogues.' With regard to the statement of Zeno, it must be admitted that it rests upon a very uncertain basis. Diogenes only says, vaguely, 'They say that Zeno of Elea was the first who wrote dialogues' (διαλογίζει τινας ρητορικάς τοις 'Ελεάριοις, and Athenæum quoting him as describing him as the answering and questioning Zeno (ἀντιανοιγόμενος καὶ ἐμφύων Ζηνός: Sophist. Elench., c. 10, sec. 2). It is more probable that Plato’s adoption of the form of dialogue resulted rather from the nature of the case than from any direct imititation. The spirit of the dialectics of the Eleatic school, with which Plato’s philosophy was so strongly imbued, depended mainly on its being in the form of question and answer. The very name ‘dialectics’ points to this: for 'dialectic' as we understand it now, as appears from the use of the common word dialectis (διάλεξις), 'conversation,' to signify 'dialectics,' in Aristoph., Nup., 317: ἀντίς γυμνὸς καὶ ἐμφύων καὶ κατέχων ὅποιον ἀφεθήσεται—diseuse or questioner in this occasion. Zeno, on the other hand, gave the explanation of the word which Xenophon puts into the mouth of Socrates: (Xen. Memor., iv. 5, sec. 12), an explanation which is obviously derived from its secondary and technical meaning. That Plato then should write in the form of dialogue seems to be the natural consequence of his wish to investigate and analyze, dialectically and after the manner of Socrates, the various questions of philosophy then in vogue. Nor is it at all necessary to suppose that Plato was immediately indebted to any one for the dramatic tone which characterizes his dialogues: indications of a real dramatic genius, and of imitative powers of the first class, are scattered so plentifully over all his works, that we cannot fail to recognize everywhere the hand of an artist who copies nature alone. It is not improbable that he studied, and with great profit, both Epicarmus and Sophron: Alemeus, quoted by Diogenes of Laërtis (iii. 18), says that he transcribed most of the writings of the former; and according to Quintilian (i. 10, sec. 17), the philosopher was so fond of the times of Sophron, that he had a copy of them under his pillow when he died. It seems however likely that he did not become acquainted with the writings of these two authors till his first journey to Magna Graecia and Sicily; and that he was not indebted to any one for the dramatic tone in which the dramatic element is most prominent, were composed long before that time, so that he could not have owed anything to them in the first instance. But that Plato was much influenced by his acquaintance with other writers, it is impossible to overlook the fact that, for their matter, they were composed with a continual reference to the labours of his predecessors. In fact, Plato’s whole system is rather critical and eclectic than dogmatical, and many of his dialogues are rather reviews of the speculations of former philosophers than formal enunciations of any doctrine of his own. The view which he took of philosophy was decidedly a literary and dramatic one. The fragments of the lost dialogues of Zeno, those in which the dramatic element is most prominent, were composed long before that time, so that he could not have owed anything to them in the first instance. But that Plato was much influenced by his acquaintance with other writers, it is impossible to overlook the fact that, for their matter, they were composed with a continual reference to the labours of his predecessors. In fact, Plato’s whole system is rather critical and eclectic than dogmatical, and many of his dialogues are rather reviews of the speculations of former philosophers than formal enunciations of any doctrine of his own. The view which he took of philosophy was decidedly a literary and dramatic one. The fragments of the lost dialogues of Zeno, those in which the dramatic element is most prominent, were composed long before that time, so that he could not have owed anything to them in the first instance.
of Socrates, formed the main groundwork of Plato's philo-

sophy: 'On the death of Socrates,' say he, 'Plato first went to Egypt to add to his stock of knowledge, and after-

wards travelled to Italy and Sicily in order to learn a tho-

roughly by the chronological arrangement of the treatises. Accordingly, as he was devotedly attached to Socrates, and wished to put everything into his mouth, he interwove the elegance and subtilty of the Socratic mode of arguing with the Pythagorean mode of reasoning. As he did not only advance his theorems by learning which the Pythagorean philosophy included,' Th

at this is only a remote account of the matter we shall see presently; but Cicero is undoubtedly right in attributing a great deal to the influence of the Pythagorean philosophy on the opinions of Plato. It was from this, no doubt, that Plato was induced to pay so much attention to Epicharmus, who was not only a great comedian, but also a renowned Pythagorean philosopher. (See Clinton's Fasti Hellenici, vol. ii., p. xxxvi., note g, for the identity of Epicharmus the philosopher with Epicharmus the poet.) The benefits which Plato derived from a study of Epicharmus are distinctly asserted by Diogenes Laertius (iii. 9-16), and some lines are very point-

edly quoted from one of his homilies, in which he prophesied the glory which would be paid to him by his pupils and opponents by adopting his sayings and clothing them in a different dress. Plato sometimes quotes Epicharmus by name (as in the Gorgias, p. 565, D), and in one passage he phrases a saying that he had heard from him, as the two chief poets, one of the comedy, the other of tragedy. (Theaet., p. 155, E.) Plato seems to have been also familiar with the works of Empedocles, who stands half-way between the Pythagoreans and the Eleatics, and who, as Mr. Thirlwall suggests (Hist. of Greece, ii., p. 139, note), may probably be looked upon as the predecessor of Plato in his eclectic view of philosophy. There is certainly a direct reference to the doctrines of Empedocles in the Sophistes, p. 205, and an allusion to him, also, in the Gorgias, p. 214, B, though Stahilbaum considers that Anaxagoras is there referred to; and Hermann, in an essay recently pub-

lished (Opuscule, vol. vii., p. 106), has hesitated to rec-

ognize the very works of Empedocles in a celebrated passage of the Phaedrus, p. 246, B-E.

On the whole then it is clear that Plato was well ac-

quainted with the labours of his predecessors and contempor-

aries. But though he may have learned much from them, so far as the views from his great teacher Socrates, we should nevertheless do him great injustice if we regarded him merely as a compiler and systematist of what had been already ad-

vanced by his predecessors. On the contrary, he had the spirit of great thoughts. Plato’s whole system is based upon some grand and novel ideas, which may indeed have been faintly conceived by others, but which were never distinctly uttered and proclaimed till Plato made his appearance. The opposition between the law and the facts, between the general and the particular, between the objects of reflection and the objects of the senses, between the world of intelligence and the visible world, was never clearly pointed out till Plato’s time. It is very true that Socrates did awaken the idea of science, and so lay the foundation of dialectics, on which the philosophy of Plato was chiefly built up (see this distinctly stated by Aristotle, Metaphys., xii. 4, 635); and it is for the most part to him that we owe the development of the new method of speculation. The merit of Plato is that he expressed distinctly and systematically what Socrates only struggled to articulate. The comprehensive view which Plato took of philosophy in all its bearings im-

pelled him to treat all the branches of his subject and with the works of all his predecessors. From the nature of the case, it was impossible that Socrates should fill these previous conditions; he was not only an individual, but he was so by his very nature. It is not true that he was qualified by his character and habits, even if he had possessed the necessary opportunities, to study the systems of other philosophers in an enlightened and critical spirit. The kindred genius of Plato was luckily fostered by every encouragement; and it was the happy chance which finally gave him the plan of which his master had sketched the rude outline. With many features totally dissimilar, the relation

between Socrates and Plato very nearly resembles that be-

tween Kepler and Newton; for Kepler’s laws stand related to the ‘Principia’ of Newton much in the same way as the Socratic idea of science does to the dialectical system of Plato. In fact, let us consider the laws of Kepler and the natural division according to which they may be classified. Owing to the great admiration in which Plato has been held from his own time down to the present, we have the collection of several dialogues, some of which contain a great deal and of which but few are included, which, beyond all manner of doubt, were written by some imitators of the great philosopher. Thus, the ‘Eryxias’ and ‘Aristocles’ were probably written by A. Menexenus, the Socratic philosopher; the ‘Epinomena’ by Philip of Opus; and the ‘Second, Alcibiades’ by Xenophon. Leaving out of the question, then, these and other dialogues generally admitted to be spurious, we may divide the genuine dialogues into three classes, which will arrange in the following chronological order, for reasons most of which have been adduced by Schleiermacher, Ritter, and others, but which our limits will not permit us to enter on in this place. In the first class we place the dialogues composed by Plato before he set out upon his wanderings; these are the ‘Symposium,’ ‘Menexenus,’ ‘Hippasus,’ ‘Laches,’ ‘Hippias major,’ ‘Protagoras,’ ‘Charmilus,’ ‘Ion,’ ‘Meno,’ ‘Alicibades i.’ ‘Euthydemus,’ ‘Euthyphro,’ ‘Apology,’ and ‘Crito.’ In the second class we refer those which he wrote from Sicily to his return, which include his second journey to Sicily, namely, the ‘Gorgias,’ ‘Thea-

tetus,’ ‘Sophistes,’ ‘Politics,’ ‘Cratylus,’ ‘Parmenides,’ ‘Symposium,’ ‘Menexenus,’ ‘Philebus,’ ‘Phaedo,’ and perhaps also the ‘Republic,’ ‘Timaeus,’ and ‘the Critias.’ In the third class we place by itself the long dialogue on the ‘Laws,’ which is but loosely connected with the general sys-

tem of Plato’s works, and seems to be quite an extraneous part of his philosophy. However, notwithstanding this, we may not be far from the truth if we consider the ‘Laws’ a genuine work of Plato. It is true that it is the only one of his dialogues in which Socrates does not bear a part; it is true that there is a striking difference of style between the ‘Laws’ and the other works of Plato; there is in fact a greater difference between the style of the ‘Laws’ and Plato’s ordinary style, than between this last and the style of the epistles, or even than that of the dialogues, which are confessedly spurious; there is a profusion of anachronisms, it is true, and we find no traces of many of the works of Plato: and Ast has objected that the whole plan of the work is inconsistent with Plato’s views as developed in the ‘Republic.’ But with regard to the non-introduction of new members of the body of the ‘Laws,’ and the adoption of a language similar to that of the ‘Laws’ it was written with an object totally different from that which Plato generally pro-

duced to himself. With regard to the style, it may be con
duced to himself, with regard to the style, it may be con-
cluded, that Plato was confidingly admitted to be spurious, for the philosopher says that the second state is not intended to be a perfect one, is only a relative state of perfection, and that there are objections of little weight, and even if they were more difficult to encounter, they would be at once overthrown by the express and positive testimony of Aristotle to the genuineness of the work. And but few persons can believe that which must convince every intelligent reader that no man but Plato then living in Greece could have written a treatise at once so comprehensive and so profound. Schleiermacher’s arrangement of Plato’s works with the one suggested above; it deserves however a separate mention on account of the celebrity of this writer and the important effects which have been produced by his
acute and careful examination of the connection of thought running through the dialogues. He also divides them into three classes,—1, elementary dialogues, or those which contain the germ of all that follows, of logic as the instrument of knowledge, and as the connexion of the multitude of the possible conditions of knowledge; these are the 'Phaedrus,' 'Lysis,' 'Protagoras,' 'Laches,' 'Charides,' 'Euthyphro,' and 'Parmenides,' to which he subjoins, as an appendix, the 'Apologia,' 'Crito,' 10, 'Hippasus minor,' 'Hippasus,' 'Parmenides,' 'Sophistes,' 'Symposium,' 'Phaedo,' and 'Philebus,' with an appendix containing the 'Theages,' 'Eristate,' 'Alcibiades I.,' 'Menexenus,' 'Hippasus major,' and 'Chironophon 3, constructive dialogues, in which the practical is completely united with the speculative; these are the 'Republic,' 'Timaeus,' and 'Critias,' with an appendix consisting of the 'Laws;' the 'Epistles;' &c. We cannot here enter upon a criticism of this arrangement; we will only remark that we strongly object to Schleiermacher's separation of the 'Theaetetus' from the 'Sophistes' and 'Ploticus,' which form, with it, a trilogy of dialogues, like the three which are placed together in his third class; and we think that, according to his own principle, as the 'Phaedo' is preparatory to the 'Parmenides,' and as the discussion of the idea of the good, is preliminary to the 'Republic,' these two dialogues should occupy the same relative position as the two which they precede. Thus much may also be said for the arrangement of the several dialogues according to their time; and this order, so far as it relates to their contents, they also form three classes: the Dialectical, Ethical, and Physical dialogues. The formal division of philosophy into these three parts is subsequent to Plato's time, as it was first established by Xenocrates and Aristo at Megara (Sextus Empir., Adv. Math., vii. 10); but Plato certainly had the idea of such a division, which is distinctly attributed to him by Cicero (Acad. Post., 1, c. 5, § 19), and is clearly discernible in his works, though many of them may not be assignable to any one part in particular, thus the 'Theaetetus' and its two connected dialogues are clearly dialectical; the 'Republic' and 'Laws,' ethical; and the 'Timaeus,' physical. In endeavouring therefore to give a general view of Plato's philosophic system, we shall adhere to this division, and consider first his views on dialectics, on which his whole system was based, and then his applications of these views to the two provinces of moral and natural philosophy.

I. PLATO'S DIALECTICS.

1. Plato's doctrine of dialectics is based upon a view of the definition 'real,' which he was the first to bring forwards. The definition, he saw, consists in generalisation and division, i.e. it is made either per genus or per differentiam. The first, the base of the whole idea of philosophy; the second is the development of the former. Consequently, as genera, according to Plato, depend upon dialectics, and dialectics on the definition 'real,' in order to general scientific reasoning we must generalise and classify—σαρ σεώς συναφιές καὶ οὐδὲν διακλίνει. The ideas of Plato are, strictly speaking, nothing more than general terms, the main part of the definition 'real,' as Leibnitz calls it, and Plato seems to have constructed his theory of ideas as a mean between the contradictory systems of the Heraclitean and Eleatic. The Heraclitean doctrine of a perpetual flux, modernized, and with the dogma of Protagoras, πάντως μηρον ἀνθρώπων.—The individual man is the standard of all things,—was directly opposed to Plato's notion of science as based upon an idea or general definition, which is in itself its own ground and authority; for it peremptorily denied being (σωφρνός) of things, and set up in its stead a mere genesis or becoming (γεννασθαι), so that nothing could be predicated of any thing as fixed. On the other hand, the Eleatic doctrine, that all is one, and that there is no multiplicity; 2, that there is no possible being, and that there is no becoming, no change, no generation, augmentation, or decay—were equally opposed to Plato's belief in the reality of sensation, for they absolutely denied the existence of the sensible world. Now as the reality, both of the permanent being (σωφρνός), i.e. of the genus signified by the general term, and of the mutable genesis of the phenomena, of the idea as well as of the multiplicity of things, it was necessary that he should form some conception of sense which would admit of both. The general science which Plato set forth with this view was called dialectic, or the art of conversing, and was based on an examination (the first which had been attempted) of the syntax of the Greek language. In order to make a sen-
lard of all things, and not the individual man, as Protagoras
said. (Legg. iv., p. 716, C.)
Before we pass from this outline of Plato's dialectical
system to its application to ethics and physics, it will be
advisable to state the general character of the dialogue
which made this application himself. With this view we shall
give a sketch of the mode of reasoning which the philosopher
has adopted in two most important and interesting dialogues,
the 'Gorgias' and 'Theaetetus.' These may be distinguished
from all the other parts of his work, not so much by the
object of their inquiries as by the different methods they have
employed. The opposition between these two dialogues has
been well pointed out by Schleiermacher, in his introduction
to the former of them (p. 5, seqq.). The highest and most
general objection of the latter, namely, that an unjust
being while still enveloped in the fleeting and transitory
phantasmagoria of the senses, to represent the former as
that which is real and good in the latter, and to point out
and reconcile the apparent opposition between these two
two contrasted objects of contemplation. There are two objects
of effecting this: the immediate method, or that by which
we pass at once from the true to its semblance; the indirect
method, or that by which we pass from the feeling of opposi
tion, or the comparison of two evils, into the field of
pleasure, or pleasure, or pain. But, as the term themselves,
object to the term. In the former case, the object of
metrical science, in the one domain, to sensation, in the other. The 'Gorgias'
is the development of the former antithesis; the 'Theaetetus'
of the latter.
The interlocutors in the 'Gorgias' are—Gorgias, the cele
brated sophist and rhetorician; Polus, a rich and arrogant
Aristotle, who had written a book on rhetoric; and Callicles,
the son of an ambitious dialogue: to whom are
opposed Socrates and Periander, the latter of whom however
takes but little share in the discussion. The
business of the dialogue is divided into three parts. I.
The refutation of Gorgias with regard to the subject of rhetoric.
Gorgias says the subjects of rhetoric are justice and in
justice, but that the rhetorician sometimes acts unjustly;
'but,' says Socrates, 'if justice and injustice are the subjects
of the rhetorician's art, the rhetorician, as such, must be
just by necessity. For the beginning is the end of the
refutation of Polus with regard to the distinction be
between the good or the beautiful, and the pleasant. Polus

'says,' to act unjustly has less of the beautiful (it is alogos)
than to suffer injury, but the latter has less of the good (it
is an evil, that is, an alogos) than to endure. Therefore, it has
little or no excellency of either justice or of law or of
nature. But it is not a necessary evil: for the just man to be punished; for the act and the sufferer
are homologous: now the act of punishing an unjust man is
just; therefore the suffering of the unjust man is just also:
consequently every excellence is an absolute evil. But an
excellence either of justice or of law is not of the
power of injustice; therefore it is not profitable for him. III.
The refutation of Callicles with regard to the proposition
that all good is exhausted in the pleasant. Callicles asserts
that through it is the case that the dog of de
ference than to justice, this is only by law or
and not by nature. For to be desirable is an end to get more than others, and
this is natural. Socrates first confutes Callicles' idea of a
discrimination between law and nature (p. 488, B, 489), and then
brings three decisive arguments against his position that every
thing pleasant is good, the first in p. 495, D, the second in
p. 495, E—497, D, the third in p. 495, E—499, B. To escape
from this difficulty he constructs a distinction between good and bad pleasures; but Socrates
refutes this at once by showing that if we are to make this distinction, it follows that we seek for an object not because
it is pleasurable, but because it is good (p. 499, B, 500, A); and
then maintains that the rhetoric, or what is the same
thing, the political principles of demagogues, like Callicles,
are morally bad, for they have pleasure for their object, not
the good. Socrates concludes by showing that happiness consists in justice and order (p. 505—508); that it is
not in itself desirable (p. 508—512), and so on: and the
dialogue concludes with a fable relating to the state of the
soul after death, which is a subject not considered by Plato.
kinds of motion, i.e. change of place and change of form.

Then alluding to his former distinction of τὰ πάντα καὶ τὰ πάντα... τὰ υπολεκάτων, and to what he said about the effects of their concurrence, he shows that, according to the testimony of the human rational faculty, nothing is certain in anything; and that we neither can be said to perceive, nor yet to perceive, i.e. neither to have science nor to have it not; and hence every proposition is equally right and equally wrong, and nothing is left but the ὕποπτως. To this Socrates, it is clear, is alluding as the best of all the lovers of knowledge, and to his own claim, i.e. to his being a lover of knowledge, the χωρίων.—the mere instruments, not the causes of sensations; we perceive each sort or quality by a different ἐνδο, or organ, and consequently must compare them, &c., by precisely the same means by which we perceive ourselves, i.e. ἕν τε τῆς... ψυχῆς: the soul conceived as unconnected with the senses, is the subject of essence and truth, and therefore science and sensation are different, for science is not without essence and truth. 'Hence it follows,' says Socrates, 'that we must seek for science in that name, the whatever it is, which is given to the soul when it is engaged in abstract speculation.' (p. 187, A.) From this, Thetitetus asserts (II) that science is right conception (δῆλος δόξα), and when he is driven from this, after a series of subtle disquisitions on the nature of false conception, he maintains (III) that science is right conception combined with reasonable explanation (ἐν κατὰ λόγον δῆλος δόξα, i.e. δν μὴ ὀν lόγος, ὁν εὐνίκητα (πρ. 201, D.). This is the reasoning with which the proposed physical definition of λόγος, and the opinion is finally refuted. The dialogue ends with this recapitulation of the results obtained:—'Therefore neither perception nor right conception, nor right conception, combined with reasonable explanation, can be science' (ὅτα δὲ... αἰσθήσεις ὑπὸ τῆς ἐνδος ὑπὸ μὲν ἀληθὴς δόξας ὑπὸ δὲ... λόγος προφυγεῖννυµον εἰστήμην ἐν τῇ.)

We have dwelt at some length upon these two dialogues because they furnish direct illustrations of Plato's application of his dialectical system to the departments of ethics and physics. The Gorgias points out the steps by which Plato would proceed in handling the moral questions of common occurrence in his time; for ethics was always treated as a part of politics, and the propositions to which he was opposed, were principally dangerous from the bearing of their doctrines on political morality. The Theaeus is a critical review of certain materialistic opinions, which it was necessary to confute before a new system could be fairly set on foot. Plato himself says, 'It is better to do a little well than a great deal in an unsatisfactory manner' (Theaeus, p. 187, E); and as Sir C. Wren gained nearly as much credit for the scientific manner in which he restored the ancient St. Paul's, so has Plato, with his genius and skill with which he planned and constructed the new edifice, so that Plato should receive the commendation which is due to him for the elaborate and searching scrutiny to which all his writings are subjected ever since his time, before he ventured to propound the grand and original conceptions on which his own philosophy was built up.

II. The ethical system of Plato, though traces of his views in this field are discernible in many of his other dialogues, is most fully developed in his two 'largest treatises,' the Republic' and the Laws, and most distinctly in the former. From Plato's general plan of considering everything controversially and with reference to the theories of his predecessors, we might draw two conclusions with respect to his system of moral philosophy: 1st, that he would at once discard the notion that the pleasure resulting from sensible impressions could be the highest good, for this was contrary to the fixed opinion of the cities, and the view of the Republic, he formally confuses the dogma that the suumnum bonum is either pleasure or knowledge alone. The highest good, as is hinted in the Philebus, and distinctly shown in the Republic, is moral virtue; this principle is the basis of all Plato's views on moral and political education; it is the good quo man, that is, as far as he is an intellectual and moral agent. Moral virtue, according to Plato, is the sub-

ordination of man's lower faculties to his reason as the sovereign faculty: a man is virtuous when the will acts as the servant of the reason in controlling the appetite. When this subordination is perfect in the individual, it constitutes his rectitude, and when it is perfect in the general, but good; or goodness; consequently, his happiness in this world. When a corresponding subordination exists in the state, that is to say, when the guards, or military caste, in perfect sub-

ordination to philosophic rulers, serve the reasoning and governing minds, the state becomes the instrument of controlling the passions of the populace, the state is a perfect one. The Republic of Plato is a development of this analogy between the ideas of the perfect man and the perfect state. This analogy depends upon the division of virtue into the four cardinal virtues, as they are called, namely (1), prudence or wisdom (φρονησις); (2), courage, constancy, or fortitude (ἀρετη); (3), temperance, discretion, or self-

control (κατανόησις), and (4), justice or righteousness (δικαιοσυνή): and on the supposition that the whole province of virtue is exhausted by these four virtues. We cannot agree with Schleiermacher (Einleitung zum Stant, p. 26), that 'Plato manifestly took up his description of the four connected virtues only out of respect for the existing classification, just as they had passed in a similar manner from common conventional usage into the philosophy of Socrates.' To us it appears that the classification of the four cardinal virtues is so intimately connected with the ground-

work of Plato's moral and dialectical system, that it must have been in the most serious earnest, and with the most deliberate choice, that he assumed this division of virtue as the basis of his moral philosophy. In the Republic, Plato assigns to each of the four parts of the soul the corresponding division of virtue (De Republic, i., p. 427-434):—The state, being a per-

fect one, must exhibit in itself the four cardinal virtues; not that every one of its citizens must exhibit them all perfectly: the philosophical rulers will represent its ἀρέτησις; the courageous soldier or army its δοξα σις; and the well-con-

ducted populace and craftsmen its κατανοησις. The remaining virtue, ἰσιδρομησις, is the virtue of the whole; it is the principle and cause of the existence of the other three parts, and is the groundwork of all the others. The state, to keep to its own business, and to abstain from all πολεμογογοικοινοιν or interference with the affairs of the other portions. Passing from the state to the individual, Plato recognises three distinct principles in the soul of man: τὸ λογισμον τὸ ποιητικόν, and τὸ ἐνθυμητικόν (p. 439, D.): the first belongs to the rational part of the soul; the last to the irrational part, with this distinction, that the ἐνθυμητικόν, though it is classed under the same general head with the ἐνθυμητικόν, is very differently treated from it, as it is the guardian of the state, and is the one who governs and controlling the ἐνθυμητικόν (p. 430, A., p. 441, E.)

These three principles correspond in our philosophical language to the reason, the will, and the appetite. The reason may be translated by τὸ λογισμόν, or τὸ λογισμον, the will by τὸ ἐνθυμητικόν, and the appetite by τὸ ποιητικόν. These three principles in the soul of man are analogous to the three classes in the perfect state: the philosophical rulers represent the reason, the standing army the will, and the populace the appetite: and as there was a virtue corresponding to each of the divisions of the perfect state, and one which kept them all together, so, in the righteous or virtuous man, the reason is full of wisdom, the will is strong in fortitude, and the appetite is under the healthy influence of self-con-

trol; and all three are kept together by justice, as the moral harmony which keeps together the head, the body, and the middle sound, or the octave, the base, and the fifth (p. 443, D.); or, to express the whole in the words which Sliues writes has apparently borrowed from Plato (Hen. F., act i., sec. 10).

Red.

While the armed hand doth fight abroad
The advised head doth study at home;
For government, through high, and low, and lower,
May serve, as well as by the sword or foot
Congrewn in a full and natural close,
Like music.

Cost

Therefore doth heaven divide
The state of man in divers functions,
Some to be governed in common sense,
To which is fixed, as an aim or butt,
Not only the whole, but the parts of one,
This idea of the three principles in the human soul, and of the subdivision of the two inferior faculties to the
sovereign reason, is most beautifully and clearly worked out in the mythus which forms a prominent part of Plato's earliest dialogue, the 'Phaedrus' (p. 246, A, seq.), where the god of love, Eros or Cupid, half-god, half-man, seated on a pair of winged steeds, one of which is well-bred and well-trained, and the other quite the contrary: the quiet horse (the will) is obedient to the rein, and strives to draw its wilder yoke-fellow (the appetite) along with it, and to induce it to heed its leader, and not to be considered solely as a creature ofvana, but as something over and above the senses, which, 

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factory. Meineke thinks that Plato's scheme for a community of property and wives is undoubtedly ridiculed in the 'Ecclesiazusae,' and adduces as an additional argument for this the satirical remarks of Aristophanes upon one Aristyllus (Ecles., 646; Plut., 310), whose name Meineke, following Eusebius (H. C. Gr. xxxvi. p. 589; Zeller, M., p. 142, F.), regards as a diminutive form of Aristocles, Plato's original name. We know that in general the Greek comedians were not unwilling to seize upon an opportunity of ridiculing the customs of any philosophical school, philosophies to which Plato certainly did not escape literary satire of this kind. (Meineke, Histor. Crit. Com. Græc., pp. 238, 240.) Of the Laws as related to the Republic we have already said as much as seems to be necessary. But the physical speculations have less interest for the modern reader than either his dialectics or their application to moral philosophy. In this, as in the other departments, Plato starts with a critical review of the systems which preceded him. The earliest philosophical systems among the Greeks, those namely which we assign to the Ionian school, were solely physical; and they started always from some theory with regard to the origin of things. According to Thales, this primitive element was water; according to Anaximander, it was air; Anaximander considered the world, in its primitive state, as a vast and infinite chaos; Diogenes regarded it as originating in a rational and intelligent principle; and Anaxagoras, who is the father of the two modern systems, the names philosophers, recognised a supreme mind (sēoç) as the principle of life, which imparted motion and form to the material elements, and reduced to order the chaotic mass of primary atoms. The Eleatic school, with the position which thus formed the culminating point of the Ionian school—the admission of a supreme intelligence. According to the Ionians, and in the very language of Thales and Heraclitus, 'All the universe was full of gods.' (Aristot., De Anim., i. 5; De Part. Anima., i. 4.) According to the pantheism of the Eleatics, on the contrary, the universe itself was the Deity; in the words of Xenophanes, the one being (tò oú), the universe, was God. (Athen., Hellen., i. 120.) Heraclitus saw gods in all things, so it may be said that Xenophanes saw all things in God.' (Thirlwall, Hist. Gr., ii., p. 136.) Parmenides endeavoured to demonstrate this pantheistic view of Xenophanes by arguments deduced from the idea of existence, which denied the possibility of creation and total destruction. In this view he was followed by Empedocles, who also held the doctrine of an uncreated and indestructible existence. At an earlier period, Pythagoras had maintained the immortality of the soul, and the connexion of all the objects in the world subsists by a numerical harmony, a view which his contemporary and rival, Heraclitus, adopted under a modified form (Plato, Sympos., p. 187, A); and Empedocles, who seems to have combined many views peculiar to the Atheism of Anaximander, and also, as has been mentioned above, forms the link of connection between the Eleatics and the Pythagoreans. As this was the general state of physical science when Plato wrote, and as he seems to have been always striving to reconcile the contradictory systems of Heraclitus and the Eleatics, and to extract from them their common element of truth, we may see how both Plato would proceed in constructing a theory of the universe, and how this theory would be connected with his dialectical system and his theory of ideas. It is obvious that he would maintain a creation, in opposition to Parmenides and Empedocles, and would oppose himself in this, as in his dialectics, to the perverted Anaximander: and this we find to have been his method, if we compare the 'Philebus' and the 'Parmenides' with the 'Timæus,' which contains the fullest development of Plato's physical and cosmogonic system. We also observe in the 'Timæus,' and in a celebrated passage of the 'Republic' (viii., ad init.), that Plato attached a great weight to the numerical theory of Pythagoras, though we do not know enough of the latter to be able to determine the correctness of Anaximander's criticism of it; and the whole of his system, although it may not have decided on the critical states of the Deity, and the complicated numerical relations by which he estimates the durability of his state. In the 'Timæus,' as in everything else, he starts with the opposition of immutable essences to mutable substances, and begins by stating the contrast between the unity of the idea, as real existence, and the multiplicity of things, as only a seeming existence. The latter, according to Plato's system, are treated after the semblance of the former, which is their ἱλικία, or ἐπαρθένη. In this way of viewing the subject, Plato's physical theory at once assumes the form of a history of the creation, a κοσμοτάξια, and is certainly not the last word of philosophy, still less of the practical.
the individual man, ζων εκατ μιος, and the world out of which he was formed, consisted in the need of organs by the former, whose soul is thus necessarily connected with the faculty of perception (αισθανεσθαι). So far as the soul of man is concerned, we are informed about it by the philosopher, as a body of the person. But, as the individual body after death unites itself with the great body of the universe from which it sprung, so also the soul, so far as it is not represented in the mind written on the surface of the moon, is part of the world, of which it is an emanation, and remains undestroyed and indestructible. In this part of the subject, the views on the amorality of the soul, developed in the Platonc, were especially influential. With reference to this, the reader will easily see that the methods which Plato followed in this department of philosophy were uniformly consistent with that which he adopted in other fields of inquiry. His object in this, as in everything else, was to discern the one in the many, and it was in the foundation of his system, to assert the reality of the latter against the Eleatics. This, we have seen, was from first to last Plato's great general object: this idea was the foundation of his ethical system; it was the guiding-post which directed him to the right end in his moral and physical speculations; it was the clue by which he sought, and seldom sought in vain, for the truths which had eluded the multitude.

From this general review of Plato's philosophy, necessarily an imperfect one, the reader has, we hope, formed some estimate of the Catholic spirit of this great writer, and the grand and original conceptions by which he endeavoured to unite in one great system all that was true in the results of previous investigations. Plato was the greatest of all philosophers, because he was the first who adopted a true method, and followed it out in all its bearings and applications. It would not be easy to overrate the influence which Plato's works have exercised upon the speculations of all subsequent inquiries. Although his name has not been so much bandied about for good or for ill as that of his scholar and successor, his name is more precious, more extensive nor less durable. Coleridge has said that all men are born disciples of either Aristotle or Plato (Table Talk, p. 95); a saying which, as far as it goes, is perfectly true. It may be thought that the doctrines which Plato was the first to proclaim to the world, and to adopt, and those which come to the bearing of them, if their minds are akin to his; otherwise, they will have recourse to the modification of those doctrines which was propounded by Aristotle, whose mind was no less repugnant than their own to the spirit of Platonism. There is one field in which the immediate influence of Plato's philosophy has always been most especially active, namely, in Christian theology. Many of the opinions which were advocated as heretical may be traced back to the Platonism of the early Fathers of the Church, and this is particularly the case with regard to the doctrine of the Trinity. That Plato himself entertained some of the opinions which have been attributed to him in this subject, has been most satisfactorily proved in an able investigation of the Trinity of Plato and of Philo Judaeus, and of the effects which an attachment to their writings had upon the principles and reasonings of the Fathers of the Christian Church.

The Greek text of Plato's works was first established on a careful examination of all the MSS. by Immanuel Bekker (Berlin, 1816-1823). His edition was followed by the very elaborate and critical edition, of which capacity and value it appeared in 1819, and which is still in the course of publication. Godfrey Stallbaum, who published a critical edition in 1821-1826, is also engaged upon an elaborate, critical, and explanatory edition of all Plato's works, of which eight volumes have already appeared. A complete French translation of P. C., No. 1133.

Plato has been published by Victor Cousin. Schleiermacher's German translation is unfortunately incomplete, and we have no good English version of Plato's whole works; that by Tayler is far from satisfying the critical reader. Mayer Sydenham is engaged upon a German translation of Plato's works, but they go, but this unfortunate scholar was unable to complete more than a very small portion of his design of presenting Plato in an English form. The books which have been translated by them are those which we believe to be the very numerous. There is a voluminous work by Tennyson expressly on this subject: it is written too much with a reference to the Kantian philosophy, and, though very learned, is not much recommended. Van Heuse's Initia Philosophiae Platonice, Traject, 1827, 1831. A good deal may be learned from Ast's Platonis Leben und Schriften, Leipzig, 1816, though the author has advanced some inadmissible paradoxes with regard to the genuineness of a number of works not unquestionably written by Plato. There is also much valuable matter in the four books of Prolegomena to Stallbaum's edition of the Parmenides (Leips, 1839, pp. 4-343). But Plato is, above all others, a writer who must be studied in his own works; no exposition can give an adequate idea of the beauty of his style, or the clearness and cogency of his arguments, and he would escape many of the misrepresentations by which his literary fame has been inadmissibly enhanced; his readers were more numerous, and if there were fewer persons to pronounce sentence upon him without having read a syllable of his writings.

PLATON, the celebrated archbishop of Moscow, whose family name was Leshvin, was born June 24th, 1727. He was the son of a village priest near Moscow, in the university of which capital he received his education, and, besides studying the classical tongues, made considerable proficiency in the sciences. His talents soon caused him to be noticed, for while yet a student in theology, he was appointed, in 1757, teacher of poetry at the Moscow academy, and, in the following year teacher of rhetoric at the seminary of the St. Sergius Lavra, of which his literary fame has been chiefly conserved. His readers were more numerous, and if there were fewer persons to pronounce sentence upon him without having read a syllable of his writings.

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twenty volumes, containing, besides various other pieces, 595 sermons, essays, and orations. Many of these are considered masterpieces of style and of eloquence; but, as might be expected among so great a number, all are not equally finished as to manner, or original and impressive as to their subjects. A selection from them, consisting of the finest passages, has been published in two volumes, in 1802.

Dr. Clarke has narrated some particulars of a conversation which he had with the archbishop, which exhibit him somewhat en deshabille. Mr. Heber (afterwards bishop of Calcutta), says of him—"This prelate has long been very famous in Russia as a man of ability. His piety has been questioned, but from his conversation we draw a very favourable idea of him. Some of his expressions would have rather suggested to the minds of a very religious and earnest man, the frankness and openness of his manners, and the liberality of his sentiments, pleased us highly. His frankness on subjects of politics was remarkable.

PLATY, River, [Mississippi, River.] PLATURA, [Viperidae.]

PLATYCARCINUS, Latreille's name for a genus of Cancerians; it is the Cancer of Leach.

M. Milne Edwards is of opinion that this genus, as well as Pseudocarcinus and Etitus, approximates very closely to the Crabs (Cancer, Linn. and Milne Edwards) and to Xantho; indeed they were for a long time united under the same generic appellation. In fact, continues Mr. Edwards, the general form of the Platycarcinus differs but little from that of Xantho.

Generic Character.—Carapace rather convex and very much widened; front narrow, nearly horizontal, and divided into many teeth, one of which occupies the median line. The front and the borders of the carapace are divided by fissures into a great number of dentiform lobes; their posterior extremity reaches to the level of the anterior border of the cardiac region, and is continued with an elevated line which surmounts the lateral-posterior border. The internal antennae, instead of being bent back obliquely outward, are turned nearly directly forwards. The external antennae are disposed nearly as in Etitus, their basilary joint is very much elongated, and is partially lodged in the space between the internal angle of the anterior border and the front; but the second joint of these appendages, instead of springing near the external border of the first in the internal orificial canthus, is inserted at a small distance from the antenunal fossa, completely out of the orbit; for the rest, it is small, cylindrical, and presents nothing remarkable. The disposition of the pieces of the mouth, of the feet, and of the abdomen is nearly the same as in Xantho. M. Milne Edwards divides this genus into two sections. 

A. Species having the external orbital angle much more advanced than the neighbouring portion of the lateral-anterior border of the carapace.

Example.—Platycarcinus Pagurus (Cancer Mamm. Rond.; Cancer Pagurus, Linn. and Herb.; Cancer Ambricius, Olivi.). This is the well-known Black-clawed or Edible Crab, a native of our coasts, and so highly prized for the table. It is the Torquate, Puspar, Howard, &c. of the French, and Partan of the Scotch. [Cran.]

B. Species having the external orbital angle more advanced than the neighbouring portion of the lateral-anterior border of the carapace.

Example, Platycarcins irroratus. Lacustrine Crabs of N. America. M. Milne Edwards divides the Cancrinia into three great sections:

1. Cancrinia Cryptodice, consisting of the genus Edita (Othara).
2. Cancrinia Arquus, comprising the genera Cancer, Carpilius, Zoysmys, Lagostoma, Xantho, Chlorodiis, Panaepus, Ozius, Pseudocarcinus, Etitus, Platycarcinus (here treated of), Filamens, Rupella, and Pirimela.
3. Cancrinia Ostraci, comprising the genera Kripina, Trapetia, and Melia. Such of these forms as our limits permit us to notice are illustrated in this work among the North-Cancrinia.

For M. Milne Edwards's notice of fossil crabs, see the article Crab, vol. viii., p. 129. Zoysmys also occurs in a fossil state.

PLATYCERCUS, [Perichilus.]

PLATYCRINITES. [Ecrebitez, vol. ix., p. 392.]

PLATYDACTYLS. [Gecko, vol. vi., p. 105, 106.]

Mr. Swainson, in his 'Classification of Reptiles,' places the genus under the family Iguanidae, with the following genera: Iguanidae, Xantus; Abernaty, Pithecodyles, Sphenocryptodactylus, and Phyllopalus. [Natural History of Fishes, Amphibians, and Reptiles, 1839.]

PLATYLEPS, Dr. Leach's name for a genus of Bessis Caropoda, whose shell is conical, depressed, consisting of six valves, each divided internally by an angular plate or buttress springing from the centre, and its operculum consisting of four valves in pairs. It differs from Balanus in having the anterior margin of the internal structure of the valves. [Chilomastus of Blainv.] PLATYLOPHUS, Mr. Swainson's name for a genus of coniostral birds arranged by him as a subgenus of Buria (Barua), in the subfamily Corvinae, or Typical Corvids, family Corvinae. General Character.—Bill intermediate in form between Panga and Garrulus. Culmen slightly curved; gonys ascending, curved. Front of the head and nostrils defended by stiff, scutaceous feathers. Nostrils oval, basal, Rictus bearded. Wings rounded; the primaries not much longer than the scapulars. Tail rounded, terminating in setaceous points. Feet moderate. Hind toe and claw very long, directed backwards, which is short; lateral toes equal. Claws acute.

Example, Platypus galericulatus (Garrulus galerliculatus of Vieill.). PLATYMERIA, a name given by M. Milne Edwards to a species of Bosphurus eufrousaeus, which is placed by him in the tribe of Calappinae [Oystroms], connecting on one side the Calappa [Calappa] and Murria, whilst it is also approximated by other characters to the Cancerians. [Cran. PLATYCEPHALUS, [Trionyx.]

Generic Character.—Carapace very broad, tolerably elliptical, except that on each side it is prolonged into a strong spiniform tooth; its lateral-anterior borders are not divided by an angulation; the posterior border is angular, and disposed as in Calappa, &c. The orbits are oval, deep, of moderate size; and a fisure may be remarked at the middle of their lower border. The internal and external antennae are disposed nearly as in Murria. The buccal frame is much wider anteriorly than in the other genera of the tribe, and the small portion of prelabial space which reaches beyond the external jaw-feet is not divided by a median partition, and is only imperfectly covered by the lateral-internal projections of the external jaw-feet. The external jaw-feet are very wide anteriorly; their third joint, which is as long as the second, terminates by a rather large anterior border, and presents below its anterior and internal extremity a very small tooth and the fourth joint, which is inserted the fourth joint: this last is exposed, and very large, but does not reach the level of the anterior extremity of the third joint. The basilar appendage of these organs, which gives a valve for closing the afferent apertures of the branchial cavities, is lamellar, very large, and subterminal. The sternal plastron is oval. The first pair of feet have nearly the same form and disposition as in the Calappa, but the hands (manus) are longer and less elevated. The preceding feet are very long, and very much compressed; their third joint, or femur, is remarkably large and nearly lamellar, and the tarsi are long and styloform. The second pair are rather longer than the second and fourth; the fifth toe is not so much divided on any part of the body as the male is composed of five distinct joints, the third of which presents behind a very considerable transversal crest.

M. Milne Edwards, who gives the above description, states that he knows nothing of the manners of this genus, and describes one species only—Platymeria Gaudichaudii, which is of a reddish colour, and three inches (French) in length.

Locality.—The coasts of Chile.

PLATYPUS [Onithorhynchus.] N.B. Platypus is also Herbist's name for a genus of coleopterous insects [Bostriches, Fab.]. PLATYPUS, Mr. Milne Edwards's name for a genus of Muscicapidae. [Muscipacid.] Mr. Swainson remarks that in Todus [Muscicapid.] the bill extends a long and boat-shaped appearance, toge
there with a remarkably short tail, and delicate although lengthened legs. These latter characters are, he adds, continued to Platystoma, but the bill in the latter has become so short and so broad as to present a miniature resemblance to that of Eurylaimus [Muscicapidae]: the legs are long, and those of the male are bare. Mr. Swainson gives the following account as to how they are not at all adapted for walking.

Example, Platystoma cancrorum. Locality.—Brazu. (Zool. Ill., 1st series, pl. 116.)

Platystoma is also M. F. Cuvier's name for a genus of Slender-billed Flycatchers. PLATY' STERA, a name given by Sir W. Jardine and Mr. Selby to a genus of flycatching birds, arranged by Mr. Swainson as a subgenus of Todirostrum. [Muscicapidae].

Mr. Swainson's name for a genus of the subfamily Eurylaiminae. [Muscicapidae].

PLATY' URUS, Mr. Swainson's name for a genus of Wrens. [Wrenna.] But note: Platyruga is Meigens's name for a genus of dipterous insects.

PLA UEN, one of the most considerable manufacturing towns in the kingdom of Saxony, is situated in a beautiful valley on the banks of the White Elster, 75 miles west-south-west of Leipzig; it is in its conflagration suffered severely by a waterspout in 1834. Among the public buildings there are two churches, a royal palace, a lyceum with a seminary for schoolmasters, which is one of the hand-sewing schools, and a railway station. There are also two hospitals, and two considerable orphan asylums. The principal church, the interior of which is distinguished by a noble simplicity, has a celebrated altar-piece by Matthais, representing the birth of the Virgin. The manufacturing establishments, which are of great importance, but said not to be so flourishing as they once were. There are manufactories of stockings, net-lace, bobbin-net, oil-cloth, and extensive brandy distilleries. Plauen is the centre of the manufacture of muslins known by the name of Patenscher repaire, which gives employment, in the circles of Vogtland (of which Plauen is the capital) and of the Erzgebirge, to 30,000 persons.

Plauen was in the thirteenth century a community of the Teutonic order. The population of Plauen is now nearly 9000.

(Stein; Cannabich; Engelhardt.)

PLAUTUS, MARCUS AC CIUS, was the greatest comic dramatist of Rome. His parents and the time of his birth are unknown, and scarcely anything that has come down to us respecting his personal history is worthy of credit. During the republic the Romans scarcely paid any attention to the personal history of their early poets, and we cannot place much reliance on those circumstances in writing their lives, they seem to have delighted in making up marvellous tales. It is however generally supposed that Plautus was born at Sarina, a town in Umbria; and in connexion with the story of his sonorous humours, which are described not only as made of low birth, but of such bodily deformities that nature would seem to have purposely designed to make his countrymen laugh at his person as well as his wit.

It appears that Plautus commenced writing comedies very early, for A. Gellius (iii. 3.14) relates, on the authority of Varro, that after having made some money by his works which he seems to have sold to the seditious, who had the superintendence of drama, as recompensations (Prolog. of Amphitruo, v. 72), and having embarked in commercial speculations, he lost it all, and was reduced to poverty. Upon his return to Rome, he entered into the service of a baker, who engaged him in giving him his own hand-mill. Whilhe he was thus employed he wrote three comedies, the 'Saturio,' the 'Addictus,' and a third, the name of which was not known to Gellius. Of the first two, only a few fragments are preserved. St. Jerome (in Euseb. Chron. Ql. 140) describes his working in a rephrasing house, but in one of his letters at the time of his return to Rome his distress was increased by scarcity and dearth of provisions. From these isolated accounts we must infer that he was believed among the ancients that an author was gained not so much as he enabled to leave his employer, he continued to live at Rome, devoting his time to his favourite pursuits. Whether he enjoyed the rights of a Roman citizen is not known. The time of his death is differently stated by Cicero and St. Jerome. The latter places his death in Olympic 14, 150, but it is uncertain whether it took place in the first or the last year of that Olympiad. Cicero (Brutus, c. 15) says that Plautus died during the consulship of P. Claudius and L. Porcius, that is, 184 a.C. or Olympic 145. So much is certain, that the best period of the life of Plautus was the time immediately before and during the second Punic war.

The plays which then amused his countrymen retained their popularity for several centuries, for we see, from a passagc of Asinius Pollio, that the *Amphitruo* was performed in the reign of Diocletian. It is impossible to ascertain the number of comedies which Plautus wrote, for in the time of Gellius no less than about 130 pieces bore the name of Plautus; and the same has been said of Terence. There were not to be not by him, but either, as Varro supposed, the work of one Plautus, or, as seemed more probable to Gellius, plays of earlier Roman dramaists which had been revised and improved by Plautus, and, on account of their similarity in style to his own works, were attributed to him. Many critics and grammarians, according to Gellius, were engaged in endeavouring to ascertain what comedies really belonged to Plautus. Varro, who wrote a work upon the subject entitled 'Questiones Plautianae,' reduced their number to 21, which were designated *Farronianae,* and which were generally acknowledged to be the real works of Plautus. L. Alius added four others. Servius (ad Aenid. 1. init.) says that some authors ascribed to Plautus, or rather assumed his names and fragments of the other and doubtful plays are of such a nature that we are unable to draw any conclusions from them. The names of the plays still extant are: *Amphitruo,* 'Asinarius,' 'Aulularia,' 'Captivi,' 'Casina,' 'Castellaia,' 'Episicus,' 'Bacchides,' 'Mostellaria,' 'Menacecum,' 'Miles gloriosus,' 'Merscor,' 'Pseudolus,' 'Poenulus,' 'Pera,' 'Rudens,' 'Stichus,' 'Trinummus,' and 'Truculentus.' The play of Plautus which Servius says is the 'Vidularia.' The *Querulus* evidently does not belong to Plautus.

The great number of comedies ascribed to Plautus shows the popularity which his style and manner of treating a subject must have had among his countrymen, and this conclusion is confirmed by the laudatory expressions of the antienta themselves. L. Alius Stilus (Quintili, x) said that if the Muses were to speak Latin, they would adopt the manner of Plautus and Cicero. He attributes to Plautus, in respect to the elegance, refinement, liberal feeling, and humour, an on equality with the old Attic comedy. This character is not confined to simple passages, but pervades the whole. The manner of these comedies consists in looking at the bright side of the world in every respect, even under the most unfavourable circumstances. In modern times, with the exception of one or two critics, it is universally agreed that Plautus was one of the first poets of antiquity; and Lessing, to whom we are indebted for the best essay on the life and works of Plautus that has been written in modern times, admits that although he had repeatedly read the 'Captive' for the purpose of discovering something faulty, he never was able to find any, but that, on the contrary, each time he found more reason to admire the play. Horace (Ad Pisones, 570) indeed, who was both a sound critic and a great poet, seems to speak with more satisfaction of the verses and the jests of Plautus. But on a close examination of the passage of Horace, it will be found that in reality he only censures his inharmonious verses, and some jests which he thought too coarse for the refined and polished manners of what was called the good society of his own age, which however were a very imperfect standard for estimating the manners described by a dramatist who wrote more than 150 years before him. As for the inharmonious verses of Plautus, they may be excused on this same ground, in addition to which he must be observed that rugged verses and metrical licences in general are much more pardonable in comedy than in any other kind of poetry. But Horace, like Cicero, disliked very poetical sentiments.

A question which naturally presents itself with regard to every Roman author is, in what relation did he stand to the Greeks? There is a remarkable passage in Horace (Epist. ii. 212.)
1, 58, ‘Plautus ad exemplar Siculi proprare Epicurarii,’ which has generally been interpreted as if it implied that Plautus had taken great pains to imitate Epicurus. But proprare cannot by any means have this signification: it only means to bring forth the living, and the action, which are indeed peculiar to the comedies of Plautus; and it must have been this peculiarity in which Horace meant to say that Plautus followed the example of Epicurus. It is true that we know nothing of the world of 1279, in what way this opinion of Horace is correct; but all we do know of the general character of the Doric poets is in favour of our explanation of the passage of Horace. Moreover we do not find that there existed any similar one in the subject he had to ridicule. For all the comedies of Plautus and any one of those of Epicurus. The old and middle Attic comedies can have served as models to Plautus only in a very general way, as Rome was anything but a proper place for that kind of dramatic poetry; but the new Attic comedy must have exercised a much greater influence upon him, and it is here that we find many plays the titles of which correspond with those of Plautus, though this is no ground for believing that in all instances of this kind he took Greek drama as his model. The manner in which he treats his characters is one of singular boldness and freedom: they are Greeks, and yet speak and act entirely like Romans; their manners and situations always remind us of Rome. But this is, partly, the spirit and design of the poet that this impression should be made, for he knew well that the nearer he brought his characters to those of his audience, the greater would be the effect produced on his spectators. It is a fair and striking picture of a Roman matron. Philemon, Diphilus, and Antiphon seem to have been his principal models in single pieces, for some of their plays bore the same or similar titles as some of those of Plautus; others of his plays seem to have had nothing analogous in Greek literature, and may therefore be considered as entirely original. Plautus himself set most value on his ‘Epictetus,’ as he himself intimates in the note. One of the candidates says that he was particularly partial to the ‘Pseudolus’ and the ‘Trocméntus.’ But although he has impressed upon all his plays the stamp of his peculiar genius, still there is not one which, in comparison with the rest, does not appear new and striking. His metres are still a matter of great difficulty, but mainly on account of the various readings, and more especially as all the MSS. of Plautus are derived from one which is very corrupt. Some remarks on the subject of the comic metres are given in the article TERTIUS. A. Mai, in 1815, discovered at Milan a codex rescriptus, containing some plays of Plautus, but it is so much mutilated and so illegible, that we cannot hope to derive any considerable benefit from it.

It is well known that there exist a number of spurious scenes in the comedies of Plautus, which, as Niebuhr has shown, were written for the purpose of supplying either actual or imaginary gaps in the original MSS. Of some of them he has given an account written by himself, while others are very absurd, and betray their original origin. The scene in the ‘Poenulus’ which is considered spurious was indeed found by A. Mai in a very old MS. at Milan, but this cannot prove its genuineness, as some of these supplements may have been written even before the fifth century of our era.

Compare the excellent essay of Niebuhr, in his ‘Kleine Schriften,’ p. 139, ff.

The most curious and important editions of Plautus are that of Camerarius (Basel, 1556, cum freg. et not. G. Fabricii) and that of J. F. Gronovius (Ludg. Bat., 1664, which was reprinted in 1669, and at Amsterdam in 1684, 2 vols. 8vo.). There is also a Bothe (1686, 4 vols. 8vo.), by Lindemann; but the latter, especially who has edited separate plays, has made great progress towards the establishment of a good text. The comedies of Plautus have been translated into almost all the languages of Europe. The first version of ‘The Old Woman’ was by Maître, of the Môme. Dacier published, in 1653, her French translation of the ‘Amphitruo,’ ‘Epictetus,’ and ‘Rudens.’ In 1719 there appeared two complete French translations, the one by Livry, in 16 volumes, in 1807, the others by Gueudève, at Leyden, likewise in 10 vols. 8vo. The Germans have numerous translations of single plays; and there is a translation of all the works of Plautus by Kuffner, published at Vienna in 1676, in 5 vols. 8vo. Another G. G. S. Köpke (1809-1820), in 3 vols., which is much better, but not complete. English translations were published, in 1716, by Eichard (comprehending the ‘Amphitruo,’ ‘Epictetus,’ and ‘Rudens’); in 1754, by Cooke; and in 1827, by Cotter. In the last of these translations, which comprehends the ‘Pseudolus,’ ‘Trinummus,’ and ‘Rudens,’ the objectionable passages are omitted. There is an excellent translation by Bonnel Thornton, ‘The Comedies of Plautus translated into English blank verse.’ Lond., 1767, 2 vols. 8vo.

It was continued by Richard Warner, vols. 3 and 4, Lond., 1772, 8vo.; vol. 5, Lond., 1774, 8vo.

PLAYFAIR, JOHN, was born at Benvie in Forfarshire, March 18, 1710. He was the son of a farmer of the parishes of Liff and Benvie, and to him he was indebted for his education till he attained the age of fourteen, when he was sent to the university of St. Andrews. Here he soon became remarkable for his love of study, but more particularly for the rapid progress which he made in mathematics and natural philosophy. There are upon record two proofs of his early proficiency: one consists in the fact that, very few years after his matriculation, Dr. Wilkie, the professor of natural philosophy, finding himself, through indisposition, unable to discharge the duties of his office, delegated them to Playfair. The other is the testimony of George Hill, then a fellow-student of Playfair, and subsequently principal of St. Andrew's College, who, in a letter to his father, written during his undergraduate ship, and published by his biographer Dr. Cook, very ingenuously observes, 'Playfair has very great merit, and more knowledge and a better judgment than any of his class-fellows. I make no exception of myself; my patron's perfect knowledge of reading to which my inclination led me was calculated to make a better figure at St. Andrew's; but in judgment and understanding I was greatly inferior to him.' In 1766, when eighteen years of age, he distinguished himself as a candidate for the professorship of mathematics in Marischall College, Aberdeen. The examination was a strict one, and lasted eleven days, some may fourteen. The candidates were examined in the following parts: a subject to be judged to have excelled him, namely, the Rev. Dr. Trail, on whom the appointment was conferred, and who attributed his success solely to the disparity of years, and Dr. Hamilton, who subsequently filled the same appointment with much credit.

Upon the death of Dr. Wilkie, in 1772, he offered himself as his successor, but was again unsuccessful; and on this occasion adequate means of determining the relative qualifications of the candidates do not appear to have been re-orted to. The same year the responsibility of providing for the support of his mother and her family having devolved upon him by the decease of his father, he considered it his duty to accept the clerical orders by which he could make his intense and growing predilection for scientific pursuits. Having accordingly applied for and obtained the living of Liff and Benvie, he entered, in 1773, upon the duties of his ministry, in the discharge of which and in the education of his young charges, he is said to have displayed great zeal. In the following nine years. Such a mode of life was not unfavourable to the prosecution of those researches in which he had already engaged with so much avidity. The first fruit of his leisure hours in this respect was a paper communicated to the Royal Society of London, and inserted in their Transactions for the year 1779, ‘On the Arithmetic of Impossible Quantities,’ which evinced a greater taste for the purely speculative than had hitherto been displayed by British mathematicians of that day. The object of the author was to show that ‘imaginary expressions are never of use in investigation but when the subject is a false one, and it is in the solution of real problems that they never lead to any consequences which might not be drawn from the affinity of those measures; and that they are indeed no more than a particular method of tracing that affinity.’ (Works, iii., p. 58.)

A subject of much importance of discoveries of a higher order had some years previously engaged his attention, while on a visit at Schehallien to witness the experiments of Dr. Maskelyne on the attraction of the mountains in that district, on which he afterwards published an account of in the Philosophical Transactions of another, vol. 12, p. 174, and another, vol. 13, p. 396.

He resigned his living, in 1782, to superintend the edu
ation of the sons of Mr. Ferguson of Raith; and in 1783 he was appointed professor of mathematics, jointly with Dr. Adam Ferguson, in the university of Edinburgh, an appointment which involved a new system of peculiar austerity. In his conversation, so far as he was from wishing to set off what he had to say by any brilliancy or emphasis of expression, that it seemed generally as if he had studied to disguise the weight and originality of his thoughts under an assumed form of speech and most quiet and indifferent manner; so that the profoundest remarks and subtlest observations were often dropped, not only without any solicitude that their value should be observed, but without any apparent consciousness that they possessed any.

From the year 1804 he was a frequent contributor to the 'Edinburgh Review,' and most of his articles in that periodical still possess a high degree of value. They are—1, Review of Mudge's 'Trigonometrical Survey,' 1802; 2, Review of M'Chehan and Delambre, 'Base du Système Métrique Decimale,' 1807; 3, Review of Laplace, 'Traité de Mécanique Céleste,' xi., 1809; 4, Review of 'Le Compte rendu par l'Institut de France,' xv., 1809; 5, Review of Lambton's 'Indian Survey,' xxii., 1813; 6, Review of Laplace, 'Essai philosophique sur les Probabilités,' xxiii., 1814; 7, Review of Baron de Zach, 'Attraction des Montagnes,' 1815, 8, on the 'Kénner des Cl external and upon the occasion of the presentation of Facts relative to the Election of Professor Leslie.

His intimacy with Dr. James Hutton led to his becoming a strenuous supporter of the geological theory which bears his name. His 'Illustrations of the Huttonian Theory of the Earth,' Edin., 1802, 2vo. (Works, vol. i.), have been greatly admired for the clearness with which the system itself is there for the first time unfolded, and for the manner in which he examines the several arguments that had been adduced against it; but as they are described by a contributor to the 'Encyclopaedia Britannica,' the 'faddish critics of France' may have acknowledged that Mr. Playfair writes as well as Buffon, and reasons incomparably better, it has justly been a matter of regret that talents such as his should have been employed for so many years on a subject relative to which the requisite data had not been collected for coming to either useful or satisfactory conclusions. Of the necessity of more extensive observation Mr. Playfair was fully aware; and, besides many journeys undertaken for the purpose of examining the geological features of his own country, immediately after the restoration of peace, in 1815, he set out upon a geological tour through the United States for the purpose of furnishing material for an enlarged edition of his 'Illustrations,' which however other occupations prevented him from maturing for the press.

After his death, which took place at Edinburgh, 19th of July, 1819, Dugald Stewart, in a letter to Mr. Playfair's nephew and biographer, observes, 'As to those features of his character which are less known to the public, a faithful and perfect remembrance is preserved in the masterly portrait of Mr. Jeffrey, which you will no doubt add to your memoir.' The article here alluded to will be found under the notices of Playfair, in the 'Annual Biography' for 1820, and in the 'Encyclopaedia Britannica.'

To it we refer the reader, confining ourselves to the extracts which follow. 'He possessed in the highest degree all the characteristics of a fine and powerful understanding; at once penetrating and vivid, more distinguished perhaps by the caustic force of his style than by the brilliancy or rapidity of his movements.' 'As a teacher he took care to imbue the minds of his pupils, from the very commencement of their study, with that relish for the truths it disclosed, and that high sense of the majesty with which it was invested, that put into their own bosom . . . and formed them betimes to that clear, masculine, and direct method of investigation by which, with the least labour, the greatest advances might be accomplished. In his conversation, as well as in the particular sketches were often slight and imperfect, his chief effort and greatest pleasure consisting in their revisal and correction. The outline being complete, he could proceed with the filling in to an almost indefinite extent, enriching and improving as long as he thought fit, without risk of destroying the proportions or injuring the harmony and unity of the design, and without waiting for favourable moments of peculiar alacrity. In his conversation, so far was he from wishing to set off what he had to say by any brilliancy or emphasis of expression, that it seemed generally as if he had studied to disguise the weight and originality of his thoughts under an assumed form of speech and most quiet and indifferent manner; so that the profoundest remarks and subtlest observations were often dropped, not only without any solicitude that their value should be observed, but without any apparent consciousness that they possessed any.'

actions are commenced either by writ or by plaint: by
writ, if the court in which the action is brought cannot take cognizance of a complaint without an act of the royal authority in the particular cause, by the writ, if the court is authorized to proceed without royal interference. This writ till lately issued out of chancery, and was called the original writ, by which it was distinguished from process issued, after the commencement of a cause, by the chancellor, which is whereby the plaintiff takes cognizance of the cause. The original writ or plaint stated the nature of the complaint shortly, though more fully in some forms of actions than in others. After the defendant appeared in court, and pleaded the matter in question, he was entitled, within a certain time, to receive from the plaintiff a more detailed statement of the nature of the complaint. This statement was called the declaration, narratio, or count, though these were sometimes of these terms more commonly used to designate one of several distinct matters of complaint comprised in the same declaration.

Within a certain number of days, varying according to circumstances, after the delivery of the declaration, the time for pleading arrives; the term 'pleading' being not only used in the extensive sense mentioned above, but also in the limited sense of the answer, whether consisting of statement or of denial, which is made by the defendant to the plaintiff upon the plaintiff answering the declaration, the defendant is not allowed to accumulate his objections both of law and of fact in one defensive pleading. The peculiarity of our system in referring matters of fact to the decision of an umpire, and of leaving objections of law to the judges, has created a necessity for separating the matters of law from those of fact, and of presenting the latter in a shape in which they can be readily understood by persons who are not lawyers by profession. It is to the severe analysis of these features of our system that the system of special pleading is probably indebted for its excellence.

When called upon to plead, the defendant has several courses open to him. First, he may admit the complaint set out in the declaration either by express acknowledgment or by silence. In either case the court pronounces judgment against him: in the former case, upon his confession; in the latter, upon his default, or, as it is termed, by nil dicti, those being the words by which the default of a defendant was formerly recorded. Or, secondly, he may decline to answer the charge contained in the declaration, on the ground that the court has not jurisdiction of the matter; or that the plaintiff is not entitled to sue, as being an outlaw, foreign enemy, or the like; or that the defendant is incapable of being sued, as being an infant, or incapable of being sued alone, as a married woman, or her husband, or incapable of being sued alone, as a party to a contract which forms the subject of the action, when he is sued without his co-contractor being made a co-defendant in the action; or that the plaintiff is a pretended plaintiff. This is called pleading in abatement, because the defendant prays that the court will abate (put down) or quash the proceedings. Or, thirdly, the defendant admitting, for the present purpose at least, that the facts stated in the declaration are true, may insist that these facts give the plaintiff no cause of action against him; he may accordingly rest (demur) upon the facts as they appear in the declaration, and call upon the court to give judgment in his favour upon that state of facts. This form of pleading is called a 'demurrer.' Or, fourthly, the defendant may answer the complaint, or, as it is technically called, he may 'plead to the action;' and that in one of two ways: he may deny some material allegation in the declaration which is necessary to the maintenance of the action; and, before the rules of pleading promulgated in 1834, he might in a great variety of actions, and those of the most common occurrence, plead one or more of these wider declarations;—this was called pleading the 'general issue,' which it is now permitted of those actions only in which it is expressly authorised by statute, several acts of parliament having allowed defendants who are engaged in carrying into effect some public object to plead the general issue, and under the statute of 1834, to enter into matters of defence which are inconsistent with such a denial. A plea denying either one or all of the allegations in the declaration must 'conclude to the country,' that is, to the plaintiff, and admit the statement of the defendant;—this is an admission of the existence of a jury (who are called the 'country,' as contrasted distinguished from the 'court') the truth of the matter of fact asserted in the declaration and denied in the plea. It is the same if the plea asserts a fact denied in the declaration; and nothing is lost by it, if the court, on the motion of the plaintiff, order it to be quashed.

The second mode of 'pleading to the action' is by putting in a 'special plea,' which either expressly, or, according to modern practice, tacitly, admits the truth of the allegations of the plaintiff's declaration, but without admitting the matter also avoids them. The special plea (whence the whole system is often called 'special pleading') introduces some new facts or facts, the effect of which, if true, is to show that notwithstanding the facts alleged in the declaration, the plaintiff is not entitled to maintain his suit. As it is yet uncertain whether the plaintiff will deny this new matter or will admit it to be true, there can be no conclusion to the country upon such a plea, but the defendant prays the judgment of the court in the manner most favourable to himself. A plea so being admitted or proved; and if that new matter contain an affirmative proposition, the defendant must conclude his plea with a verification, that is, an offer to prove it if its truth should be controverted on the other side. This is called 'tendering an issue.'

The next pleading on the part of the plaintiff will be regulated by the course pursued by the defendant. If the defendant has confessed the action or made default, the defendant, or his advocate, being called, may pronounce a judgment agreeable to the confession, or one consequent upon the default. If the defendant has pleaded in abatement, the plaintiff either acquiesces in the action or returns an answer to the plea, alleging not showing sufficient matter for quashing the proceedings, or he proceeds to the plea either by taking issue (denying) some material allegation in the plea, or by confessing and avoiding the plea, alleging some matter which, consistently with the truth of the defendant's plea, destroys its effect and shows that the proceedings ought not to be quashed. If the plaintiff demurs to the plea in abatement, the defendant must either abandon that plea and put in a plea to the action, or must join in demurrer. If the defendant demurrer, the court are of opinion that the plea in abatement is good, they give judgment that the proceedings be quashed: if they are of opinion that the plea is bad, the judgment is, that the defendant answer the plaintiff's plea (ponent, as distinguished from the opponend, or other words, that he plea to the action.

If the plaintiff take issue upon the plea in abatement, the defendant is bound to join issue, that is, to accept the mode of trial offered, and if upon a trial the issue be found for the defendant, he has judgment that the proceedings be quashed; but if the verdict be for the plaintiff, the judgment is, that not the defendant answer over, but that the plaintiff recover his demand against the defendant.

If the defendant demur and take issue, the plaintiff either abandons the action or he applies to the court for leave to amend his declaration; or he joins in demurrer, asserting that the declaration is sufficient to support the action. The defendant follows with an 'issue in law,' or a question between the parties, to be decided on the court after hearing the matter of law argued on both sides.

The plaintiff's answer to the defendant's plea, whether in abatement or in bar, is called a replication. If the defendant has taken issue, by pleading in denial of part or of the whole of the declaration, the plaintiff must join issue, which is done by adding to the defendant's appeal to a jury the words 'and the plaintiff doth the like, formerly et quernum inde similiter,' whence this step is called 'adding the similitar.'

If the defendant has pleaded specially, the plaintiff may either take issue upon the new matter alleged, and conclude to the country, or he may plead new matter, thus in his turn confounding and avoiding the defendant's plea. Whenever in the course of the pleading in a cause one party takes a proper issue upon an allegation of his adversary, that adversary is bound to issue and go to trial before a jury; but when, instead of taking issue, new matter is pleaded, which is an answer, or an amendment of an answer, or the opinion of the court, matters of confessing and avoiding it, or of demur to it. As the pleadings may thus go on through several more stages, names have been devised for those which most frequently occur, and the general issue is put to be determined into matters of defence which are inconsistent with such a denial. A plea denying either one or all of the allegations in the declaration must 'conclude to the country,' that is, to the plaintiff, and admit the statement of the defendant;—this is an admission of the existence of a jury (who are called the 'country,' as contrasted distinguished from the 'court') the truth of the matter of fact
even not correlative of his previous pleading. A violation of this rule is called 'a departure in pleading,' and is attended with fatal consequences to the party guilty of it.

The above is a short and necessarily incomplete sketch of the course of pleading at common law, without defining the pleadings; and it is to be remembered that the parties are carried on, the object of which is to develop the precise points in controversy between parties, and to present them in the most convenient shape for decision. Of these rules Lord Mansfield observes: The substantial rules of pleading are founded in strong sense and in the soundest and closest logic, and so appear when well understood and explained; but by being misunderstood and misapplied, are often made use of as instruments of chicane. The object of many of them is to prevent frivolous and spurious pleading, and in so doing to prevent inconvenience as well as to lessen expense, though, as might be expected, in order to avoid an evil practically felt, restrictions have been introduced which are found to be productive of as much inconvenience as that sought to be remedied.

Where a point is raised which is found to consist wholly or principally of matter of fact, the parties, provided there has been a correct application of the rules of special pleading, are distinctly apprised by the pleadings of the exact nature of the question to be decided by a jury, and are thus enabled to direct their attention to that question, and prepare their proofs with reference to that question only. If the parties in error, or if the plaintiff or defendant thereby misunderstood his case, or misconceived his subject, he has no redress against the misapplication as well as to lessen expense, though, as might be expected, in order to avoid an evil practically felt, restrictions have been introduced which are found to be productive of as much inconvenience as that sought to be remedied.

We possess very little information as to the mode of pleading before the Conquest. At or soon after that period an important revolution took place. The pleadings in the Aula Regia, and afterwards in the courts which branched out of it, appear to have been conducted vivis in the French language, by Norman advocates called 'cautours.' After a discussion before the court as to the proper form of pleading [serjeants] before the judges, the pleadings were partly in French, and partly in Latin, for the latter of which they had been finally agreed upon. Thus, little or no inconvenience arose from the prohibition which existed against the making of any alteration in the pleadings after they were entered. In the reign of Edward III. the pleadings were directed to be carried on in English, and the estates of these pleadings to be in Latin. Afterwards a custom was introduced of preparing the pleadings out of court and delivering them to the officers to be entered. In consequence of this, no interest as may be manifest, the pleadings were accosted until a period at which the parties were bound by them as being entered, and it became necessary for the legislature to interfere in order to allow amendments to be made in some circumstances, all amendments by the plaintiff, or with the written consent of the defendant by the plaintiff. But these rules, as well as all others in every circumstance of the thing, person, time, place, manner of doing, and other accidents. And thirdly, the same ought to be sufficient in law, both for the forme thereof, and for the matter, that it be such as is exausible in this court; which being otherwise, may be dismissed thence. (West.)

A bill then is a declaration in writing of a complainant, or of several complainants, who have such a common interest in the matter of the suit, that they are entitled to sue in one persona, to the common benefit of all those who are interested in the same matter; and such a bill is called a 'complaint,' and the person to whom such a complaint is made, the plaintiff. As a declaration at law, it contains the claim of the plaintiff and the grounds thereof. In form it is, as already observed, a petition or suppliation: as it commences with words of complaint, with the especial interest of the plaintiff, and a prayer of complainant against the persons from whom the plaintiff claims relief, and in order to compel them to appear and answer the bill, and those only are made defendants to the complainant's bill against whom they pray for a suit; and all persons who have an interest in the matter of the suit must either be complainants or defendants. This general rule is in practice attended with great difficulty, inasmuch as the word 'interest' is some-times vague; but it means either legal or equitable title or claim to that which is the matter of the suit, or some part of it. In cases of fraud, a person may be a party to a suit, whose only interest in the matter is his liability to pay costs. According to present practice, a bill has become a much longer declaration than formerly, which is partly owing to the more complicated nature of modern transactions, and partly to other causes. It is divided into various parts by modern writers, but in effect it only contains two parts, the declaration of the grievance and the prayer for relief. The declaration consists of what are technically called Statements and Charges; the statement contains the facts to which the plaintiff founds his title to relief; and every fact which is necessary, either by itself or coupled with other facts, to support the plaintif's prayer, should be sufficiently alleged. This rule, though it may appear vague, is enforced with the utmost rigour by any person who attempted to draw a bill without experience in such matters, really contains all that can be said in general terms.
The statements of a bill are usually followed by charges, which are not a mere repetition of the statements, but contain certain things or facts either already stated and alleged in the charges with more particularity for the purpose of obtaining an admission from the defendant, or they contain facts which in like manner or way to obtain an admission as evidence in support of his statement and his prayer for relief. It is also usual in the charges to suggest the defendant's grounds of defence, for the purpose of ascertaining what they are, and generally to make it appear beyond all question, if admitted or proved, would sustain the plaintiff's claim against the defendant. Another object is to discover what defence the defendant will make. But the main purpose of the charges is to obtain from the defendant what is technically known as admissibility of the charges in support of the plaintiff's claim, either by the admissions in the defendant's answer, or from written papers in the possession or power of the defendant. This is the great distinction in present practice between a declaration at law and a bill in equity.

Both state the plaintiff's demand and the foundation of it; but the bill in equity also contains a large part of what, if proved, would be the plaintiff's evidence. Now much of this matter which is charged in a bill may be and often is entirely false, and is invented by the plaintiff for the purpose of seeing whether he can extract some evidence favourable to himself from the defendant. The plaintiff may invent or suggest as much false matter as he pleases, but if the defendant denies that what is alleged is true, while admitting all of that which is true, what the defendant must do is to give him a right to the truth which he demands of or against the defendant. Now the defendant must answer all that the plaintiff distinctly alleges in his bill, provided it be material to the case or to every case, or he must demur or plead to it; and he cannot demur, in the case supposed, because he thereby admits the plaintiff's case to be true, and therefore he must admit that the plaintiff is entitled to the relief which he prays. Thus the plaintiff, by means of the right which he has to make charges, as an incident to his bill, may obtain an discovery of the truth, the evidence, which he wishes to have. If the defendant can plead to the bill, he is not bound to answer beyond the plea; for a good plea is a complete answer to the whole bill in part of the particular charge.

The interrogatories, which follow the charges in a bill, are no necessary part of it but they are added because they are useful in obtaining a more particular answer from the defendant. [Equity.]

'An answer is that which the defendant pleads or saith in barre to avoid the plaintiff's bill or action, either by concession and avoiding, or by denying and traversing the matter therein.' (West, 198.) Thus it appears that an answer must contain the same as a plea to the action at law. It must be a complete answer to everything sufficiently alleged and charged in the bill, at least to everything that is material to the plaintiff's claim. Formerly, if the defendant made a 'true plea and motion,' which was then known as a defendant's plea, 'true,' and traverse his suit, and motion made in court by the plaintiff's counsel, showing the imperfection of such answer, an order will be made that the defendant shall make a better answer by some certain time, and thereupon issued a subpoena ad faciendum mei, lorem (sic) responsum.' (West, 187.)

The mode of proceeding in the case of an insufficient answer has been already explained. [Equity.]

A defendant, as already observed, must in proper form and in due time, as prescribed by the rules of the court, answer the bill upon oath, unless he has privilege of peerage, or be a Quaker, or other person who is excused from taking an oath, in which case his statement on honour in the case or on the motion of privilege of peerage, and in the case case his solemn affirmation, is sufficient. But the plaintiff may consent to take the answer without the defendant's oath or signature, which is sometimes done. Those who are not Christians must swear to the truth of their answer in such form as the religion which they profess declares to be a binding form.

A plaintiff may amend his bill either before answer or after it is, he may strike out parts and insert new parts; and it is not necessary, in what is called the act of alteration. A defendant cannot alter his answer, it being a statement upon oath, but he is nearly always required, and may always, whether he is required or not, answer the amendments in the bill in such a manner as he shall think best for his defence.

A demurrer in equity needs little explanation further than what has been given. [Equity.] When it is a de-
combined result one fact which displaces the equity.' (Lord Eldon, Roee v. Teed, 15 Ves., 377.)

To this, the plea 'not denying the equity, but bringing forward a fact which, if true, displaces it,' is in substance the same as the definition of an exception by Gaius (iv. 119).--'Omnes exceptiones in contrarium conentiunt, quae si eum civilis.'

A defendant may disclaim all interest, right, or title in or to the matter of the plaintiff's bill; but it will nearly always happen that such disclaimer will be an insufficient answer by reason that the matter of the bill itself will be necessary to give an answer. Accordingly a disclaimer is accompanied by an answer to some part of the bill at least.

A defendant may demur to a part of a bill as well as to the whole bill: he may also plead to a part of a bill as well as to the whole bill; and he may demur, plead, answer, and demur, with respect to the same bill. But it is very rare that any two of these ways of pleading are united, except an answer and disclaimer, on account of the practical difficulty attendant on such a mode of defence. For it follows from the nature of these ways of pleading that they must severally apply to substantially different parts of the bill. A man cannot plead to that matter to which he demurs; for to plead is to offer something as an answer sufficient in substance, though it may not be so in form, and to demur is to allege that he ought not to answer. For the same reason he cannot answer, in the formal manner of an answer, both the matter he demurs to and the matter to which he answers; having by pleading already offered something as a sufficient answer, and having by demurrer alleged that he ought not to answer. A plea or answer will therefore overrule a demurrer, and in most cases a plea may be a sufficient answer, and answer and disclaimer are inconsistent, the matter will be taken most strongly against the defendant upon the disclaimer.' (Munday, p. 326.)

Pledgings in equity were formerly continued, like pleadings at law, beyond the bill and answer. The plaintiff replied to the defendant's answer by his replication, which is defined to be 'the plaintiff's speech or answer to the defendant's answer, which must affirm and pursue his plea, and confess and avoid, deny or traverse the defendant's answer.' (West.) Thus if the answer denied the plaintiff's claim as stated in the bill, and suggested or stated some new matter, it was necessary for the plaintiff to make a special reply which was analogous to the defendant's answer. To meet this special replication, the defendant put in a rejoinder, which is defined to be 'the answer which the defendant maketh to the plaintiff's replication, which must pursue and confirm him in his plea, or answer the plea and replication.' (West.)

If the parties be not at issue by reason of some new matter disclosed in the defendant's rejoinder, the plaintiff surrenders to the said rejoinder, and the defendant in like manner to the surrejoinder, if there be cause, which happeneth very seldom. (West.)

This method of pleading by special replications and rejoinders is now disused, and all the objects of such proceedings are at present attained by the power which the plaintiff has of amending his bill and stating his case in a better form after he has seen the defendant's answer. The disuse of special replications has also led to the practice of frequently stating the plaintiff's case more completely in his bill in the first instance, and introducing numerous charges and suggestions. Thus if the plaintiff anticipates that the defendant will answer his plea, he may do so without any risk of his answer being considered a confession and avoidance of his plea.

But whether a bill has been pleaded to or answered, the plaintiff and defendant are not at issue until the plaintiff has filed a replication and served upon the defendant a subpoena to rejoind. This is now merely a formal matter, but it is necessary to put the cause at issue, and to enable the parties to proceed to the examination of witnesses in support of the allegations of their respective pleadings. (Evidence.)

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bailor, and purchases credit for the bailor. Thirdly, the pledge may be given for the purpose of obtaining a gratuitous loan of goods or of money, or for procuring some other advantage to the bailor only. It would appear that in the first case the pledge comes into existence for the payment of a debt, in the second for the payment of damages, and in the third for the payment of a fine or penalty.

The pledge is bound to return the pledge and its increasings if, upon being requested so to do, after the performance of the engagement. This duty is extinguished if the pledge has ceased to exist by some cause for which the pledgee is not answerable. But he is responsible for all losses and accidents which happen after he has done something inconsistent with his duty as pledgee, or has refused to do his duty. When the full amount of the debt or duty therefore is tendered and refused, and the pledge is detained, the pledge is at the sole risk of the pledgee: so if the pledgee misuse the pledge. In every case where the pledge has sustained injury from the wrongful act or default of the pledgee, the owner may recover damages to the amount of the injury, in an action on the case. The act of pledging the pledge with its increasings warns that the property is own, and such as he can rightfully pledge.

The contract of pledge may be extinguished by the performance of the engagement for which the pledge was given, or by bankruptcy, or by operation of law. In the latter case by operation of law, according to the doctrine of the praetorium, unlawful without an express stipulation that the pledge shall continue. The engagement to protect which the pledge is given, may be performed within the stipulated time, the pledgee may sell, upon giving due notice to the pledgee. If no time be stipulated, the pledgee may give notice that he requires a demand full of the terms of the engagement, upon non-compliance with which he may sell.

The possession of the pledge does not affect the right of the pledgee to enforce performance of the engagement, unless there be a special agreement, by which he has engaged to impart the pledge to the pledgee only, or to look to it in the first instance. Though the pledge may sell, he cannot appropriate the pledge to himself upon the failure of the pledgee; nor is he a liberty to use it without the permission of the owner, expressed or clearly implied. Such an implication arises where the article is of a nature to be benefited by or to require being used, in which latter case the use is not only justified in, but indispensable to the discharge of the duty of the pledgee. (Commentaries on Law of Bailment, by Storey.)

As to the power of an agent to pledge, see Factor. PLEDGE (Roman). This word formerly denoted a person who was a security for another; but it now denotes a thing pledged, or secured as a debt.

The chief rules of English law as to mortgaging and pledging are derived from the Roman law, in which however there is no distinction among pledges, dependent on the nature of the thing pledged, whether it was a thing moveable or immovable, corporeal or incorporeal; and a thing could not be the subject of pledge unless it could be the subject of buying and selling, for the power of selling a pledge was an important part of the creditor's security. A man might pledge a thing either for his own or another person's debt. The terms used in the Roman law to express pledging, and also the thing pledged, are Pignus and Hypotheca. It is properly hypotheca, whatever there is a bare agreement to use a thing pledged to secure a debt, as a security to a creditor for a debt, and the thing remains in the possession of the debtor. The word hypotheca (credibilis) is Greek, and denotes a thing subjected to a claim or demand. When the thing was delivered to the creditor, it was called Pignus (Isid., Orig. v., c. 25); and as moveable things would for obvious reasons be most frequently delivered, a notion got established among some Roman lawyers, aided by the prejudice of pignus, applied to the English mortgage, and pignus to pawn or pledge; but this is not the case. No ownership was transferred by the Roman hypotheca. The term hypothecation in English law is still used to express the mortgaging of a ship or cargo.

Originally, when a man wished to borrow money on the security of a thing, he transferred the ownership of the thing to the lender by mancipatio, or in jure cessio, sub lege remanipationis, or sub fiducia; and the borrower could not recover it, unless the money was paid, or it was sold, when the debt was paid, and in some other cases also. But this mode of giving security was found to be disadvantageous to the debtor, and subsequently the thing was merely put into the hands of the creditor with a right of sale in case the debt was not paid according to the agreement: but this gave the creditor no ownership, and consequently he had no actio in rem against any third person, and therefore no sufficient security for his debt. The prutor's edict found a remedy to this defect of the pignor's action, called serviana actio, against any person who was in possession of the thing pledged, for the purpose of recovering it; and the extension of this right of action, under the name of the quasi-serviana actio, also called hypothecae, gave to the hypothec a full character of the pignus.

Thus the Roman law recognised the pignus, which arose from the contractis pignorium, and the hypothec, which arose from the pactum hypothecae. But there were other cases which in the Roman law were considered cases of pignus.

The pignus praetorium arose when a creditor, by a judicial decree, was allowed to enter into possession (mittebatur in possessionem) either of the whole property of a debtor or any part of it, with powers as if he were the owner, in order to recover his debt. It has been conjectured that this kind of pignus owes its origin to the old pignorius capio. (Gaius, iv. 26, &c.)

There was also the tacit hypothec, which was founded on certain acts. In the case of praeda rustica, the fruits of the ground were a pignus to the owner for the rent, even if there was no agreement to that effect; and if a man lent money for the repair of a house, the building became a pignus for the debt.

The creditor, though in possession of the pignus, could not use it or take the profits of it without a contract to that effect, which was called antecedens, or mutual use. If he took the profits, he had to return them to the owner when the debtor came to a settlement with him; but he was entitled to an allowance for all necessary expenses laid out on the thing pledged, as, for instance, for the repairs of a house.

After the time agreed on for payment was passed, the creditor had the right of selling the pledge and retaining his debt out of the produce of the sale. If the produce of the sale was not sufficient to discharge the debt, he had a personal action against the debtor for the remainder. Originally perhaps he could only have this right of sale by express contract, but subsequently the right to sell (usu distrainendi sine vendendo) was an essential part of the contract of pledge. Though the creditor was not the owner of the thing pledged, he was the owner of a debt, he was the purchaser, a doctrine that is only intelligible on the supposition that he sold it as the attorney or agent of the debtor. But the creditor could only sell the thing in respect of the debt for which the thing was pledged, and not in respect of other debts due to him from the debtor, though he might apparently retain the surplus of the sale in his hands as a satisfaction for such other debts. The power of sale was to be exercised pursuant to the terms of the contract; and when there was no agreement as to the form and manner of sale, the law prescribed the mode of proceeding, which the creditor was bound to observe strictly. It was once usual to insert in the contract of pledge a Lex Commissoria, according to which, the goods pledged became the absolute property of the creditor, if the money was not paid at the time agreed on. But by a constitution of Constantine (Cod., viii., tit. 33) it was forbidden to insert such a clause in the contract of pledge, and it was ordered to be preferred by the creditor, it belonged to the debtor.

A thing might be pledged to several persons in succession, whose claims were to be satisfied according to their priority in time. In this case also the term pignus was employed. A pignus, according to Justinian, Digest 50, tit. 16, s. 238, that the term pignus was applicable only to a pledge of moveable things; and this notion has also prevailed in modern times. (Ryll v. Rowles, 1 Vern.)

The true etymology of pignus seems to be the same as that of the word pigmeus, from the Latin pigmiss, which corresponds to the English mortgage, and pignus to pawn or pledge; but this is not the case. No ownership was transferred by the Roman hypotheca. The term hypothecation in English law is still used to express the mortgaging of a ship or cargo.
Pleonchelius, the Rev. Lansdown Guilding’s name for a genus of Papular (Guild.). Bulimus of authors.

Generic Character.—Animal hermaphrodite. Body corrup
turate, heliceiform; head bilobate; tentacles four, the two longer ones with oculariferous terminations; mandible very
lunate, the oscularia transverse, the triangular appendage
extaneous. Intraventricular organ retractile, at the root of
the right greater tentacle. Mantle perforated by a com-
moral foramen. Ova few, large, with a calcareous shell or
crust.

Shell rarely umbilicate, dextral, oval, spiral; the spire
Elevated, but obsolete, the two last whorls largest, ventricose,
Aperture entire, elongated. Columella with a single plate,
which is cavernoous-inflex. Lip thickened, marginate.

(Guild.)

Example, Pleochoelus undulatus.

Description.—Body olaceous-black, foot pallid beneath;
tentacles white at the apex; eyes black.

Shell stout, turrid, placed longitudinally, indistinctly
straited transversely, perrugineous chestnut, with oblique
brown undulated bands; whorls five.

Eggs oval-elliptic, indistinctly corrodent, numerous, large,
gluinosly deposited in a heap, and joined by a gelatinous
thread; at first yellowish, shining, afterwards (when dry)
pearly-calcareous.

Young pallid, the shell diaphanous, prototypical corrodent,
and of a silky lustre, no striae, and the lips simple. The
adolescent shell subdiaphanous, the bands more distinct.
The old shell covered with a glaucous-brown, thick wrinkled
epidermis, the bands evanescent, often deeply corrodent.

(Guild.)

Mr. Guilding states that this fine species occurs in im-
nense numbers in the forests of the island of St. Vincent,
generally withremen, but sometimes even copulating in the
day-time. The ova are agglutinated to the vaginating
leaves of the Tillandsia, which, from holding water, secure
a damp atmosphere at all times. The lately exuded shell
long shod in Mr. Guilding’s cabinet of a nondescript Sac-
cinea? with a depressed spine. He at last traced it to
and from the examination of this and the young shell of
Bulimus undulatus, he cautiously observes the zoologist against
basically separating such small shells as do not bear on the lip
some positive mark of maturity. In the young Pleo-
cheilius, he observes, the whole shell is without striae, and is
beautifully corrodent on its surface, the plicae being smooth
and distinctly marked as they are added by the first opera-
tions of the mantle. In the young of the other shell, he
observes, are seen numerous fine longitudinal and trans-
verse striae, which will it in vain to look for in the parts
added by the animal as it advances in strength, a circum-
stance that would have led to the multiplication of species,
that had not specimens been discovered in various stages.
(Zool. Journ., vol. iii.)

Pleione or Pleiocene. By this title (derived from PLEOCHJELUS, the Rev. Lansdown Guilding’s

Pleione or PLEIOCENE. By this title (derived from

pleione, mora, and eunic). Mr. Lyell wishes to charac-
terise the upper part of the tertiary strata. There are in
his view older and newer Pleocene formations, and some
have been for the latter class the expression Pleosteonc, or
most new.

plei'odon, Conrad’s name for the genus Irridina of

plei'odon, Conrad’s name for the genus of

pleione, brand’s name for a genus of Dorri-

brand’s name for a genus of

branchiata (Amphiponae, Bl.), which, with the same
tentacles as Chalcos, have branchiae in the form of tufts.

Locality.—The Indian Seas, where some of them grow to

a large size.

Example, Pleione carunculata (Terebelia carunculata, Gm.)

Pleiochelus undulatus, animal and shell. (Swainson, from Guilding’s draw-
ing.)
stances already before the public of the Professor's diligent research and acute observation, has brought the history of the Ichthyosauri and Pleiosauri down to the present day, throwing light upon many points which required elucidation, and completing the catalogue of the species of both genera, which he has visited the museums of this country and of the Continent.

Professor Owen characterizes the Enalosauri as vertebrae, air-breathing, and cold-blooded animals; referrible therefore to the great class of Reptilia in the Cuvierian system, and indicative of a primary modification of the typical structure of that class, by which the Enalosauri were fitted more especially for a marine life. The proof that these animals had breathed the atmosphere air is adduced, in the first place, by the observations, afforded by the position and structure of the nasal passages, and by the osseous mechanism of the thoracic-abdominal cavity, whilst the evidence that they were cold-blooded animals reposes on the unanalysed condition of the elementary ossous pieces of the occipital and cranial bones, of the lower jaw, and of the vertebral column:—the laws of organic coexistence justify the conclusions, to which the Professor comes from these conditions of the osseous system, that the heart was adapted to transmit only a part of the circulating blood through the respiratory organs. He then shows that the peculiar modifications of the Saurian type, or the special Enalosaurian characters, consist in the absence of the hall and socket articulations of the bodies of the vertebrae,—the position of the nostrils at or near the summit of the head; their separated hemal apophyses; the numerous short and flat digital bones, which must have been individual or auxiliary sheath, forming in both the fore and hind extremities a fin resembling in external appearance the paddles of the Cetacea. Although other genera of fossil saurians were aquatic and marine, and consequently possessed extremities modified for swimming, as the Ichthyosauri, so are those of the marine Cheloniens of the present day, and, in a less striking degree, the feet of the Crocodiles among existing saurians, those reptiles only ought, in the opinion of the Professor, to be regarded as true Enalosauri, which combine limbs fitted for swimming with the cranial and vertebral characters above defined.

The characters of the genera Pleiosaurus and Ichthyosauri, the types of the two principal modifications of the anatomical structure offered by the Enalosauri, are mainly derived from modifications of the vertebral column, as well with regard to the form and configuration of the individual bones, as to the relative groups of the cervical, dorsal, and caudal vertebrae. Professor Owen has also found that the vertebrae afford the best characters for the distinction of species as well as of genera.

The most conspicuous and remarkable character of the vertebral column of Ichthyosauri is the extraordinary length of the cervical portion, including from twenty to forty vertebrae. The articular surfaces of their bodies are either flat or slightly convex in the centre, and most frequently concave at the periphery; the two last are the better suited for swimming; but this character is not constant.

The cervical vertebra of the Pleiosaurus generally present the centrum, the neurocentral articulations, and the ribs in a separate or unconnected state, and although in general no transverse processes are developed in this region, an analogy with the structure characteristic of this part of the spine in the Crocodile is maintained in the division of the articular surface for the cervical rib into an upper and lower portion by a horizontal fissure—a structure which, Mr. Owen observes, is well described and figured by Conybeare in the Pisosaurus.
Plesiosaurus dolichodeirus: as these vertebrae of the neck approach the dorsal, the inferior part of the costal articulation becomes smaller, and a corresponding increase of surface is afforded by the superior facet, which also gradually rises from the centrum to the neuropophyses, and in the dorsal vertebrae stands boldly out from the outer surface of the vertebra; but here, and rarely on the cervical vertebrae of the crocodiles, is the skull of the crocodiles, he remarks, reduced to very small size. In the expanded form and oblique position of the tympanic bone, as in the Plesiosaurus, it is more marked in some species of Plesiosaurus than others; and indeed Professor Owen has seen Plesiosaurian cervical vertebrae in which no trace of it was visible. The neuropophyses, continues the author, are commonly unanchylosed with the vertebral centres in any part of the spine, and in some instances throughout the cervical, and at the anterior part of the dorsal region, the neuropophyses have appeared to be joined each by an articular surface to the spine above, as they are to the centrum below, the spine here remaining apparently throughout life unanchylosed to the neuropophyses. This condition of the upper vertebrae is that of the Saurian and Reptile vertebrate animals, and never in the warm-blooded classes.

In those parts of the spine where the vertebrae enjoyed less mobility upon each other than in the neck, the spines become anchylosed to the neuropophyses at an earlier period. The most frequent anchylosed vertebrae are the first or intermammary elements in the caudal region of the spine, but they continue throughout life to be unattached by bone either to the centrum above or to each other below; and here also their spine is not developed, and consequently no true chevron bone is formed in the Plesiosaurus. The neuropophyses are also continued along the inferior surface of a great part of the abdomen, forming there the sternal or abdominal ribs; and the two new lines behind the vertebrae, as they are called, are formed across the transverse direction to protect the expanded cerebral masses in the cranial region, so here the neuropophyses are in like manner elongated transversely, and their spine is introduced and modified for the sternal ribs; as far as the paravertebral timbers, on the contrary, are worked principally by the masseter and pterygoid muscles, and in those Saurians the temporal muscles are small and separated by a flattened space occupying nearly the whole of the simple parietal bone. The second modification, which brings the Plesiosaurus near to the lizards, is a moderate-sized elliptical vertical perforation of the median part of the parietal bone, through which the coronal suture is formed, in the Iguana described by the Rev. Landy Townend as the foramen Hominum; there however it is placed directly upon the coronal suture, in the situation of the anterior fontanelle; but the Professor observes that the same foramen exists in many other genera of Lacertian Sauria; and in Monitor, Lacerta proper, &c. it is situated entirely in the parietal bone. In the Crocodilians there is no trace of this foramen. The third modification, which approximates the Plesiosaurus to the Lacertian type and exhibits a difference from the Crocodilian structure, is the posterior bifurcation of the parietal bone, forming processes of considerable length and constituting the most prominent feature of the posterior part of the skull of the Plesiosaurus by means of an oblique sigmoid suture. The frontal bone consists of a median, two anterior, and two posterior pieces. The median frontal extends as far forwards as the mid-frontal line, the posterior ones, and appear to terminate in a point between the commissures of the narrow nasal bones. The interfrontal suture of Lord Enniskillen’s young P. macrocephalus is elevated by a ridge continued forwards from the parietal crest. The outer margin of the median frontal forms the superior boundary of the orbit. The anterior frontal enters into the formation of the anterior and superior angle of the orbit, and is wedged in between the mid-frontal and superior maxillary bones. The posterior frontal forms the orbital border which tends downwards to join the malar bone, like the columnar portion of the post-frontal bone in the crocodiles; but Professor Owen observes that it is broader and more superficially situated in the Plesiosaurus, thus bearing a greater resemblance to the corresponding part of the structure of the skull in the Lacertian Sauria. A further and more striking degree of difference from the Crocodilian type is manifested in the posterior frontal, for it is not extended into the orbit, so that the Plesiosaurus does not present an osseous ridge traversing longitudinally the temporal fossa, like a second zygoma, and dividing it into an upper and lower cavity, as in the Crocodiliformes.

The Zygomatic Arch is also very high, and is carried in a state of being extended obliquely parallel with the tympanic bone and joined to it, stretches horizontally from the malar and post-frontal bone backwards to the lower end of the tympanum, and, as in the Lacertian Saurians, begins at

Cranium.—Though the head of the Plesiosaurus resembles that of the crocodiles in its general form, it is, as Professor Owen observes, relatively much smaller in proportion to the body. The elongated form of the strong and prominent cranial bones, most of which extend from point to point, with wide interspaces like the timbers of a scaffolding, forms, he remarks, one of the first indications of a deviation from the crocodilian type, and of the affinity of the Plesiosaurus to it. The orbit, which is directed backwards to join the post-frontal bone, is therefore more highly developed in the condition of many of the individual bones. He proceeds to state that the occipital bone includes the basilic, lateral, or ex-occipital pieces in a permanently separated condition, as in other reptiles, the ex-occipital forming with a large process after the articular tubercle for the atlas, and the ex-occipital a less proportion than in the crocodiles; and the circumference of the foramen magnum is completed by the supra-occipital element, in both which respects the Plesiosaurus manifests its affinity with the Lacertian Sauria. The mastoid elements extend from the occipital to the tympanic bones; but above these, and between the occiput and the strong arch of the pedicle supporting the lower jaw, a cavity lies to the occipital region to the temporal fossa. The tympanic elements are relatively small, and the skull of the crocodiles are, he remarks, reduced to very small size. In the expanded form and oblique position of the tympanic bone, as in the Plesiosaurus, it is more marked in some species of Plesiosaurus than others; and indeed Professor Owen has seen Plesiosaurian cervical vertebrae in which no trace of it was visible. The neuropophyses, continues the author, are commonly unanchylosed with the vertebral centres in any part of the spine, and in some instances throughout the cervical, and at the anterior part of the dorsal region, the neuropophyses have appeared to be joined each by an articular surface to the spine above, as they are to the centrum below, the spine here remaining apparently throughout life unanchylosed to the neuropophyses. This condition of the upper vertebrae is that of the Saurian and Reptile vertebrate animals, and never in the warm-blooded classes.

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bony, which, in Plesiosaurus, make an extremely small part of the boundary of the nasal apertures, which last chiefly consist on each side of an interspace at the convergence of the anterior frontal, nasal, and superior maxillary bones, and are separated from each other by the nasal bones, as in the Lacertian Sauria. The intermaxillary suture extends from the anterior part of the nostrils forwards to a little more than half way between the orbit and the anterior extremity of the cranium. One of the strongest of the inferior teeth usually rises just in front of this suture, and there a slight notch seems, the Professor observes, to correspond with that tooth, presenting a resemblance to a very characteristic structure in the true Crocodiles. The lacrymal bone forms a great proportion of the anterior part of the orbit, and the superior maxillary enters next into the formation of the circumference of the orbit below the lacrymal bone: the malar bone rises upon its posterior extremity by an oblique suture. The posterior margin of the malar bone is joined to the posterior frontal bone as well as to the zygomatic, thus completing the osseous boundary of the orbit posteriorly. The usual complicated structure observable in the Saurians appears in the lower jaw of the Plesiosaurus. The dentary piece presents evidence of its soon becoming anchylosed to its fellow at the symphysis: it is chiefly remarkable for the expansion of its anterior extremity. No intervening vacuity separates the angular and surangular pieces as in the Crocodiles, but those pieces are joined together throughout, as in the Lacertian group. The surangular piece rises higher and forms a sharper edge for the insertion of the temporal muscles than in the Crocodiles, a structure which agrees with the greater development of these muscles, as indicated by the size of the temporal fossa. The articual piece presents a regular and deep concavity for the reception of the articular end of the tympanic bone: it is, as Mr. Conybeare has well remarked, more developed than in the Crocodile, and thus approximates more nearly to the corresponding part in the Lacertian type. The angular piece is prolonged backwards beyond the joint, but not quite to the same extent as in the Crocodiles.

Professor Owen next proceeds to describe the sterno-costal area, observing that the ordinary or vertebral ribs have been already spoken of as essential parts or appendages of a vertebra. The free extremities of the ribs are connected together, in the abdominal region, by the series of intermaxillary, slender, elongated pieces, to which Conybeare gave the appropriate designation which has just been noticed. Each of these sterno-costal areas includes, in the Plesiosaurus, seven pieces. The median piece is transversely elongated, slightly bent, and pointed at both extremities; the lateral pieces are similarly formed, except that the extremity of the outermost, which joins the vertebral rib, is obtuse: each piece, continues Professor Owen, as it recedes from the median line, overlaps the anterior part of the rib which it succeeds, where it is adapted to an oblique groove. This kind of joint, observes the Professor, probably admitted of a yielding or sliding motion of the pieces one upon the other, and favoured, as Dr. Buckland has remarked, considerable expansion of the cavity containing the lungs.

Pectoral arch. The broad coracoid bones, remarkably expanded as they are in the antero-posterior direction, are noticed by Professor Owen as the most conspicuous of those composing the pectoral arch: he describes their internal and anterior margins as gently convex, and meeting at the costal plane, where they overlap the anterior thoracic ribs. Into their anterior interspace is wedged the ento-sternal piece, consisting of a short mesial process and two broad lateral expansions. A strong triradiate bone, which, in Mr. Owen's opinion, seems to represent, as in the Chelonia, the scapula and clavicle united, is arched from the outer extremity of the coracoid bones, with which it combines to form the shoulder-joint, near which last point it sends
upwards and obliquely backwards, a branch or process representing the true scapula

**Pectoral extremity.** The humerus is described as a stout and moderately long bone, curved slightly backwards, rounded at its proximal extremity, and flattened as it approaches the elbow joint. The radius and ulna are both short and flat bones, but relatively longer and more distinctly marked than in Ichthyosaurus; the radius is nearly straight; the ulna curved, its concavity being directed towards the radius. The distinctly defined corpus consists of a double row of small flat rounded osteoclasts, in number from six to eight. The metacarpal bones are elongated, slender, flattened, and slightly bent. The fingers, or 'digits,' as they are termed by Mr. Owen, never exceed the number of the metacarpal bones, but generally consist of more than the usual number of phalanges. The first or radial digit, which corresponds with the thumb, has generally three phalanges, the second six or seven, the third eight or nine, the fourth eight, and the fifth six phalanges. These bones, the Professor observes, are moderately long and slender, but gradually taper towards the distal end of the digits; and they are joined together in each digit by flattened surfaces, indicative of a mere yielding movement on one another; he has little doubt that they were enveloped, like the paddles of the Cetacea, in a common sheath of integument.

**Pelvic arch.** The hinder or pelvic extremities are described as almost always equal, sometimes, as in *Pl. macrocephalus*, exceeding the anterior ones in size, and the pelvic arch as consisting of a strong and short ilium, and a broad pubis and ischium, both of which are expanded in the antero-posterior direction analogously to the coracoid bones in the pectoral arch.

**Pelvic extremity.** Professor Owen remarks that the radiated appendages of the pelvic arch so closely correspond with those of the pectoral arch, as to require little notice. In the modifications of the two bones of the leg, he found that the posterior bone, or fibula, corresponds in its curved form with the ulna, illustrating an analogy manifested in other animals. The tarsal bones are principally remarkable for their small size on the tibial or anterior side of the series, indicating that the hind paddle had a freer inflection forwards, or upon the tibia, than in the opposite direction. This structure, the Professor observes, may have given a compound motion to the propelling stroke of the paddle, similar to that which in skilful rowing is called 'feathering' the oar. The five metatarsals and their digits are found to correspond in structure with those of the fore paddle. The first...
The Enalosaurusians of the present family differ from those of the preceding most remarkably in the shortness of the neck and the equality of the width of the occiput with that of the thorax, which almost immediately succeeds it, impressing the observer with the conviction that the recent animal must have resembled a cetacean or a fish in the total absence of any cervical constriction.

This close approximation in the Ichthyosaurus to the form of the most strictly aquatic animals of the existing creation is accompanied by an important modification of the articular surfaces of the vertebral centres, each of which surfaces presents a well marked concavity, leading to the inference that they were originally connected together by an elastic capsule, filled with a fluid, as in the vertebral joints of the back-bone of fishes, and the Perennibranchiate or most fish-like of the Reptilia.

The structure of the fins of many species of Ichthyosaurus deviates from that of the cetacean paddles, and approaches in certain peculiarities more closely to that of the fins of fishes than has yet been found in any other reptile.

First, the digits exceed the typical number five, and resemble in their numerous and small constituent phalanges the jointed rays which characterise the general and ventral fins of true fishes; and, secondly, numerous cartilaginous bifurcate rays were added to the bony apparatus which supports the tegumentary expansion.

With these important modifications of the head, trunk, and extremities in immediate relation to aquatic progression, the law of the correlations of organic structure would lead us to anticipate some corresponding modification of the tail. Accordingly we find the vertebrae of this part to be much more numerous than in the previously-described Enalosaurusian group. There is no trace however of any confluence of the terminal caudal vertebrae, or of any modification of their elongated neur-apophysial and haem-apophysial spines, such as form the characteristic structure supporting the tail of the osseous fishes. The numerous caudal vertebrae gradually decrease in size to the end of the tail, where they assume a compressed form; and thus the tail, instead of being short and broad, as in fishes, is lengthened out, as in the crocodiles.

The very frequent occurrence of a fracture of the tail about one-fourth of the way from its distal extremity, had led me to suspect it to be in some way connected with the presence of a tegumentary caudal fin; and the latterly compressed form of the terminal vertebrae, since ascertained by Sir Philip Grey Egerton, has almost demonstrated the existence of such a fin. The only evidence in which the skeleton of the cetaceous mammal affords of the powerful horizontal caudal fin which characterises the recent animal is the depressed or horizontally flattened form of the terminal vertebrae. We may infer therefore, from the corresponding vertebrae of the Ichthyosaurus being flattened in the vertical direction, or from side to side, that it possessed a caudal tegumentary fin expanded in the vertical direction; and it would be highly advisable to examine narrowly the basis matrix in which the tail of the Ichthyosaurus may have been imbedded for traces of carbonaceous discoloration, or of an impression of this fin, from which some idea might be formed of its shape and size.

* See Professor Owen's paper 'On the Deformation of the Tail at a certain point observable in the Skeleton of many Ichthyosaurus,' Geol. Trans., vol. v., p. 511, second series, just published (July, 1860); and see the article Ichto-

** The general characters of the Ichthyosaurus Professor Owen treats as follows:--
Thus, in the construction of the principal natalory organ of the Ichthyosaurus we may trace, as in other parts of its structure, a combination of Mammalian, Saurian, and Ichthyic peculiarities. In its great length and its gradual diminution we perceive the Saurian character; its tegumentary covering, the Ichthyic, and its broad-based extremities the affinity to the Cetacean; while its vertical position brings it close to the peculiar condition of the natalory organ in the fleshy.

But it may be argued, the horizontality of the caudal fin of the Cetacea is essentially connected with their exigencies as breathers of the atmospheric air: without this means of displacing a mass of water in the vertical direction, the head of the terrestrial poonty, with its requisite rapidity and facility to the surface to inhale; and as the Ichthyosaurus was also an air-breather, a like position of the caudal fin might be considered to be equally essential to its subsistence in the water.

To this objection it may be replied that the Ichthyosaurus, not being warm-blooded, would not require to bring its head to the surface so frequently, or perhaps so rapidly, as the Cetacean; and moreover a compensation for the absence of a horizontal terminal fin is provided in the presence of the two posterior extremities, which are modified as paddles, and which are wholly deficient in the Cetacea.

I conceive that the living Ichthyosaurus must have presented the general external figure of a huge predatory amphibious animal, with a longer tail and smaller caudal fin than usual; scaleless moreover, and covered, according to the minute and careful observations of Mr. Buckland, with a smooth or finely-wrinkled skin analogous to that of the Cetacea.

A closer inspection of the enduring parts of these singular inhabitants of the antero deep shows that under their fab-like exterior was concealed an organization which, in the main, is a modification of the Saurian type.

Professor Owen, after observing that the general form of the cranium resembles that of the dolphin, but differs from it in the position of the eyes, and the arrangement of the ossified cranial bones, and the position of the cranium, adds, as conjecturally, that the Ichthyosaurus resembles the Eocene Protocetus, and is more especially that of the Lower Eocene of Saxony. The face, however, is not so much elongated as in this animal, which is more particularly indicated by the position of the jaws and teeth. As the Ichthyosaurus resembles the less elongated, it would be less subject to the necessity of propulsion by a powerful tail, which is the necessary condition of the Cetacea, for they have not their head and extremities interposed between the two shoulder-joints, or the centres on which the fore-paddle worked, while similar movements of the Ichthyosaurus are performed by the terminal fin and caudal fin, and the Ichthyosaurus has not so to develop a head of great breadth and the extremities; these parts are prevented from yielding forwards upon the soft muscular mass. But in the Cetacea, which were never intended to quit the deep, such a development of the head would have rendered them unbalanced to their weight, has been excluded from the mechanism of their anterior extremities; and hence it is that, when they have the misfortune to be stranded, they are unable to retain their position. The impossibility for bringing the head to the surface of the water for the purpose of breathing is the same in both the Monotreme and the Cetacean, viz. a strong muscular horizontally flattened tail. In the Ichthyosaurus a pair of hinder paddles (which in the large-headed species, as the Ich. platyodon, are equal in size with the fore-paddles) must have fully compensated for that construction of the tail, which, while it rendered it less efficient as a means of raising the head to the surface, made it perfect for propelling the animal in natation; and the sufficiency of this compensation will be better appreciated when it is remembered that the reptilian structure of the lungs and heart of the Ichthyosaurus would allow it to dispense with so perfect a machinery for rising to the surface as was essential in the aquatic species above cited.

For what purpose then were sterno-clavicular and coraco-oid arches assigned to the Ichthyosaurus? Doubtless that the anterior paddles were never intended for propulsion not only in the water but on land; that when applied to the resisting soil, they might react with due force upon the trunk. It is very conceivable that the Ichthyosaurus, like the whale, may have been supported upon the head and extremities, but it is most probable that they resorted to the shore to depose their eggs, supposing them to have been oviparous, as the sum of the analogies deducible from their osseous...
of the species of Ichthyosaurus recorded by Professor Owen, amounts to ten, viz. *Ichthyosaurus communis*,
*Con.; intermedius*, *Con.; playfordon*, *Con.; lomchidon,*
*Owen; tenuirostris, Con.; acutirostris, Owen; latifrons,*
*Konig.; billomous, Owen; thrycospondylus, Owen; and*
*trigonus, Owen.*

Skeleton of Ichthyosaurus.—restored. (Conybeare, principally.)

**Geographical Distribution, &c.—** Professor Owen concludes a Report, which leaves nothing to be wished, by remarking that with respect to the geological relations of the *Enaliosauria,* or the extent of strata through which their remains have been traced, his researches are merely confirmatory of the generalisation already enunciated by Mr. Conybeare and Dr. Buckland. 'The British Enaliosaurus,' says Professor Owen, 'extend through the whole of the oolite period, and may be traced in the wealdian, chalk, and chalk formations, the most recent depositary being the chalk marl, in which Ichthyosaurian remains have been discovered by Dr. Mantell, at Dover. Dr. Buckland has found similar remains in the gault near Benson, Oxon; and I have seen the humerus of a *Plesiosauria* from the gault near Maidstone.' (Report.)

**External Integument.—** The tegumentary covering of the Plesiosaurus was in all probability similar to that of the *Ichthyosaurus,* (see Owen n., 1847, and Lichardus, *Ichtyosaurus,* vol. xii. p. 433.) Mr. Swainson, in his *Natural History and Classification of Monocordian Animals* (vol. ii., 1839), speaking of the *Ichthyosaurus,* says, 'We have no means of ascertaining the nature of its external skin, whether it was naked as in frogs, or hard as in crocodiles. The first conjecture however seems most probable.' In 1836, Dr. Buckland had published figures of portions of the integument of Ichthyosaurian animal, in his 'Bridgewater Treatise' (vol. i., pl. 10, fig. 1, 2, 3, 4); and Sir Philip Grey Egerton is in possession of a hind-pedal of Ichthyosaurus, with its under side exposed, and showing the member covered with a skin, which reminds the observer of somewhat between the integument of a shark and that of a turtle in a similar part.

**Place in the System.**—M. M. Dunérif and Bibron arrange Plesiosaur and Ichthyosaurus under their *Sauropterygia,* and cite *fossilis* as a synonym of *Sauropsidae.* In a subsequent part of the work, headed *A Natural Arrangement of the Class Reptilia,* the 'Ichthyosaurus, Fish Lizards,' are thus defined:—'Lacertiform; feet in the form of fins, as in the aquatic turtles; tail short, compressed; the articulating surfaces of the vertebrae concave; eyes very large, nocturnal.' The genera comprising the order here, are *Ichthyosaurus, Plesiotosauria,* and *Saurocephalus,* Harlan; *Pterodactylus* being omitted.

Mr. Swainson's definition of the *Enaliosauria,* Fish Lizards, is: 'Body lacertiform, feet fin-shaped, jaws exceedingly long; and he arranges under it *Plesiosaurs* (*Plesiosaurus,* *Ichthyosaurus* (*Ichthyosauria*), *Saurocephalus,* and *Pterodactylus*.) In a subsequent part of the work, headed *A Natural Arrangement of the Class Reptilia,* the 'Enaliosaurus, Fish Lizards,' are thus defined:—'Lacertiform; feet in the form of fins, as in the aquatic turtles; tail short, compressed; the articulating surfaces of the vertebrae concave; eyes very large, nocturnal.' The genera comprising the order here, are *Ichthyosaurus, Plesiotosauria,* and *Saurocephalus,* Harlan; *Pterodactylus* being omitted.

By microscopic examination of a tooth of the fossil presented to him by Dr. Harlan, Professor Owen has proved the *Saurocephalus* to be a true osseous fish, nearly allied to, if not actually a Saurid fish, as M. Agassiz has previously conjectured.

The pioneer work of the zoological situation of the Enaliosaurians, will be seen in the excellent Report from which we have drawn so largely.

**PLESKOW.**

**PLESTIODON,** a name given by MM. Dunérif and Bibron to a genus of their Scincoidan Lizards, or Lepidosauria (Sauroptermus) *Eupepsis* of Couteau, *Eupepsis,* part, of Wagler—which they thus characterise:—

Nasal openings in the middle or nearly in the middle of the nasal plate; two supra-nasal plates. Palate with a wide median groove, opened out at its anterior extremity; pyrogynoid scales; teeth smooth.

**PLETHORA** (a Greek word, *pleApia, plethorie, fulness,* which, in the sense of excess, or medical writers) signifies a redundancy of blood. By the older writers the term was used to express an imagined superabundance of any of the fluids of the body; and the terms bilious, lymphatic, and milky plethora, &c., implied the existence of an excess of either or other of those fluids in the blood.

Diseases were also made, and by a few are still retained, between plethora from excess of blood, from insufficient capacity of the vessels, from deficient strength, and so on. In the majority of the physicians of the present day, however, the term plethora is used only to express that condition in which the quantity of blood and its nutritive qualities exceed that standard which is compatible with present or recent health.

Plethoric persons are marked by a florid ruddy complexion, a full hard pulse, a tendency to hemorrhage from the nose or other parts, a frequent sensation of fatigue and weight in the limbs, a disposition to sleepiness, and by being in what is commonly termed good condition. In this degree plethora cannot be regarded as more than giving a tendency to disease whenever any slight occasional cause is applied. In a greater degree however, it produces effects which are in themselves important: the complexion is yet fuller and more florid, the face seems swollen, and the eyes blood-shot, there is pain in the head, with giddiness, ringing in the ears, dulness, heavy sleep, and a sensation as of flashes before the eyes, inability of exertion, constant feeling of fatigue, and frequent palpitation of the heart.

Such a condition, to which some persons seem from birth peculiarly predisposed, may be produced in nearly all by the constant use of very nutritious food, by gluttony or excess in diet in abstinence, or by the insufficiency or suppression of some habitual discharge. Its principal evil is that it renders the person who is affected by it peculiarly liable to acute inflammations and to hemorrhages in important organs, as the brain, in which the latter produce apoplexy. To avoid such consequences, a less nutrition diet, abstinence from exciting drinks, and the regular employment of active exercise are commonly sufficient; but in more advanced and in extreme cases of plethora, blood must be drawn freely both from the skin and veins, from the stomach, and from the heart, which seems a peculiar disposition to its accumulation, or from which it was once habitually discharged; active aperients should also be administered, and the diet should be reduced to a much lower scale than that which bore the characteristic.

**PLEURA** is the membrane which envelopes the lungs and lines the cavities of the chest. On the walls of each cavity of the chest the pleura costalis (as it is here called) is formed by a layer of thin and elastic cellular tissue, loosely attached to the ribs, intercostal muscles, and other subjacent parts. On the exterior of the lung the pleura pulmonalis is composed of a thin superficial layer of fine cellular tissue, and a deeper layer of coarser fibrous tissue, which in most of the large animals, and in the seal and some other animals, is very elastic, and affords an important assistance in the act of expiration. The surfaces of the two portions of pleura are continuous with each other at the root of the
lung; each is covered with a delicate layer of epithelium; and they enclose within them a space called the sac of the pleura. A small quantity of fluid is constantly secreted, which moistens the opposite surfaces of the lung and of the wall of the chest, and permits their free motion upon each other. **[Membrane]**

Pleurisy is a disease, which is immediately from the French **Pleurise**, which comes from the Greek **πλευρή**, and this again from **πλευρός, the side**, which is defined by Rufus Ephesus (De Corp. Hum. Part. Arpeli., pp. 30, 51, ed. Clinch) to mean **στήνος τος το τομεί μορύδος**, which is under the *sternum*. As this is one of the diseases of which both the nature and the treatment were understood by the antients almost as perfectly as by ourselves (except of course that they did not have the assistance of auscultation and percussion), to help the student in forming their diagnosis, it may be as well to give in their own words those passages which have been repeated with more or less alteration by every succeeding writer on the subject, omitting those which are either erroneous from the lack of accurate knowledge of anatomy, or which rest only upon some fanciful theoretical speculation, and adding whatever may be necessary to bring the article as far as possible up to the level of the present state of medical science.

"Pleurisy, so called," says Paulus Aegineta (loc. cit., in Mr. Adam's translation, 8vo., London, 1834), "is an inflammation of the membrane which lines the ribs, and is attended with difficulty of breathing, cough, contra-striking, shooting, violent pain in the hypochondrium," which definition agrees with that given by Galen (De Loc. Affec, lib. v., cap. 3, p. 326, ed. Kühn; Ad Glauc. de Med. Med., lib. ii., cap. 1, p. 77; Introdc., lib. 13, p. 734; Definit. Med., § 564), Aetius, Arist., and Alexander Trallianus (locis cit.). The disease has been variously divided by different writers; Dr. Good (Study of Med.) mentions the three following varieties:

1. Pleuritis Vera, True Pleurisy. Fever, a cauma; pain felt chiefly on one side, the inflammation commencing in that part of the pleura which lines the ribs. 2. Pleuritis Mediastina, Pleurisy of the Mediastinum. Heavy pain in the middle of the sternum, descending towards its ensiform cartilage; with great cough, the inflammation, from the symptoms, being obviously seated in the mediastinum. 3. Pleuritis Diaphragmatica, Pleurisy of the Diaphragm. Painful constriction around the precordia; small, quick, labious breathing; manifesting that the inflammation is seated chiefly in the diaphragm. He adds, however, that the subdivisions lead nothing to of practical importance, as the causes are nearly alike, and the same mode of treatment is applicable to the whole. A more essential distinction is that adopted by Dr. Lask (loc. cit., vol. 2, vi., 336), and summary, that in this will be followed here, because it seems almost impossible to treat either of the nature or the treatment of these two forms of pleurisy under one and the same head.

In acute pleurisy, says Areteus (loc. cit., in Dr. Reynolds's translation, 8vo., London, 1827), "no pain in the clavicular region, together with a sharp burning heat; the recumbent posture is easy on the inflamed side, because there the membrane remains in its place, but to lie on the opposite one is exceedingly painful, and from the weight, inflammation, and dragging, the pain extends through the whole continuity of membrane to the shoulders and clavicles, in some even to the back and shoulder-blades. To this succeed dyspnoea, watchfulness, loathing of food, bright redness of the cheeks, a dry cough, difficult expectoration. To this description it may be added, from Paulus Aegineta, that the pulse is hard and serrated; and it should be noticed that the decubitus, or position of the patient, mentioned by Areteus and repeated by numerous modern writers is not constant, and therefore cannot be exclusively relied upon as a diagnostic sign, for it is sometimes observed that the aggravation of the acute lancinating pain caused by the pressure when lying upon this side, makes the patient seek a more easy position either upon the opposite one or upon the back.

With respect to the diagnosis of pleurisy, it may be distinguished from hepatitis, says Paulus Aegineta, by the pain being more acute, and the patient sitting up without expectation or sometimes with it, and by the pulse being hard and serrated; while in inflammation of the liver the pain is not pungent, nor is the pulse so rapid, and the throb throughout its duration is very different; the respiration is more frequent; and the face appears pale. (Compare Alex. Trall., loco cit.) It may be distinguished from inflammation of the external muscles, or pleurodynia (Plurodynia), by the less affecting the shoulder, and is accompanied by cough and expectoration, not hard. From pneumonia, it is hard to distinguish it without calling in the aid of auscultation and percussion, and indeed Dr. Colen, in his Practice of Physic, has treated of these affections under one common definition. It may however be observed (with Dr. Good) that in pleurisy the face is comparatively but little flushed, and far less tumid than in pneumonia; that the pulse is harder, and that the seat of the pain is fixed, while in pneumonia it shifts not only to different parts of the same side, but often from the one side to the other. The characteristic cough of pleurisy (as distinguished from that which follows pneumonia) is a short, dry, either by the back or the lung, accompanied with a thin mucous expectoration; should there be more abundant, or deviate from this character, we may suspect a complication either of pneumonia or bronchitis. The cough however (adds Dr. Law) is often wanting altogether, or is so slight as to attract the attention of neither the patient nor physician. For the characteristic signs of pneumonia derived from auscultation and percussion the reader must see the article Lungs, Disease of the, while only those relating to pleurisy will be here considered. Auscultation the inspiration will appear feeble, distant, or inaudible, but will be restored by change of posture. Agogkomy will exist when the quantity of fluid effused is no more than from 5 to 10 lbs; in this the fluid layer begins to lie on one of the sides of the chest. The bruï des froiement, or sound of friction, will be heard when there is partial aluminous exudation with little or no effusion of serum. Upon percussion there will be more or less loss of sound, with moderate resistance, decreasing from below upwards; in this disease the percussion will divide the inspiration into two parts, and the two lung sides will be diminished or removed by change of position. It is in cases of pleuritic effusion that Hippocrates proposed the succession, or shaking of the chest, as a means of assaying the degree of the disease; (De diagn. pl. pleurr., lib. i., cap. 11, ed. Adel., lib. ii., pp. 256, 258; Coac. Præm. Not., p. 306; De Loc. in Hom., pp. 123, 124;) but it is now known that no sound can be heard unless air be present in the chest at the same time, that the effusion may be combined with pneumothorax, which is a rare occurrence.

With respect to the anatomical characters of pleurisy, they agree with what may be observed in inflammation of all serous membranes, and consist partly in morbid alterations of the pleura itself, and partly of the secreted fluid. Inflammation of the pleura, says Laennec, is always accompanied by an extravasation on its internal surface; the matter effused being either coagulating lymph termed a *false membrane*, or else serosity, or a sero-purulent fluid. The false membrane, or exudation of lymph, is gradually changed into cellular substance, or rather into a true serous tissue, like that of the pleura. The serous effusion is absorbed, the compressed lymph coagulating, and the space left by the uptake of the fluid the pleura costalis becomes united into one substance, which afterwards becomes vascular and organised, and constitutes permanent adhesions. A severe pleurisy that has terminated by numerous adhesions, renders the part so effected much less liable to subsequent attacks of the same disease; and when it occurs, the inflammation and effusion do not extend to the adherent parts.

Among the occasional causes of pleurisy, enumerated by Laennec (after Celsus), are, long exposure to violent exercise; metastasis of gout, rheumatism, and cutaneous diseases; blows on the chest; and fracture of the ribs. The *winter season*, says Areteus, is most liable to produce this disease, and next to it the autumn; the spring is not so much so, unless the season be too hot; in the summer it is the least of all. In reference to the period of life, be remarks that old people are more liable to it than those who..."
and in the prime of life; and these again than children. Among predisposing causes, Laennec mentions a slender frame, narrowness of the chest, the immediate use of spirits, and tubercles in the lungs.

Pleurisy terminates either in resolution, suppuration, or gangrene. The former is the ordinary and most favourable issue. The last occurs rarely, and Laennec has seen only one instance of it from acute inflammation. Suppuration however is by no means uncommon, in which case, says Arzateus, 'shivering fits ensue, and lancinating pains, accompanied with a desire to sit in an upright posture; the breathing gets worse, and there is great fear lest the lung, by suddenly drawing in the purulent matter, should produce the dangerous phenomena: danger has been escaped: should the matter however burrow between the ribs and separate them, and either point externally or burst into the bowels, the patient usually recovers.'

With respect to the treatment, perhaps there is no disease in which profuse bleeding from a large orifice may be so fully depended upon, or has been so generally acceded to by practitioners of all ages and all nations; the only question which has ever arisen upon the subject being, whether the blood should be taken from the side affected, or from the opposite. Hippocrates and most of the earlier Greeks recommended the former, while the latter method was practised by Archigenes, and by several others, e. g. Plinius the Elder, Seneca, M. T. (On aches, 2, 68), Avicenna (Canon, lib. iii., fol. 16, tract. 5, cap. 1), Avenzoar (Teviir, lib. i., tract. 16, cap. 3, p. 23, D., ed. Venet., 1494), and their followers in the middle ages.

The dispute, which is one of those that have been settled by a perusal of the anatomical circulation, was more that time (as may easily be imagined) considered to be of the greatest consequence, and at the beginning of the sixteenth century raised a kind of civil war (as Bayle says) among the Portuguese physicians on account of the controversy between Denys and Brissot, the particulars of which are too curious to be altogether omitted. The dispute was brought at last before the tribunal of the university of Salamanca; the disputants being, on the one hand, a young fellow, a student of medicine, who had been a physician by the body of physicians; but in the meantime the partisans of Denys, who were the more powerful, obtained a decree from the civil authorities forbidding physicians to bleed on the same side on which the pleurisy was. At last the university of Salamanca gave judgment, and decided that Brissot's opinion was the pure doctrine of Hippocrates and Galen. The other party removed the cause before the emperor Charles V., 1529; and were not satisfied with established doctrine, they had a new trial in the court of the emperor. Charles declared it to be impious and deadly, and that it was no less pernicious to the body than Luther's schism to the soul. Unluckily for them just about this time Charles III, duke of Savoy, happened to die of a pleurisy, having been before beseeched by his courtiers to employ a method which Brissot had opposed. This put a stop to the appeal to the emperor, but books were written on the question in all parts of Europe, and the practice of the Arabsians was generally condemned. A list of these treatises is given by René Moreau, in the Life of Brissot, prefixed to his edition of his work 'De Incisione Veneas in Pleuritide Morbo,' Sc. Paris, 1622, 8vo. (See Bayle, art. 'Brissot,' from whom the above account is abridged.)

Besides blood-letting (which may be repeated at proper intervals, as long as the pain remains), the usual antiphlogistic remedies, such as saline diuretics, diaphoretics, purgatives, mercurials, blistering, &c., may be employed; in cases of acute pleurisy the operation of paracentesis thoracis is very frequently resorted to, and is hardly ever attended with more than a temporary relief.

Chronic pleurisy is either the continuation, as it were, of the disease in its acute form, or else exhibits at no period either the intense fever, the violent pain, or energy of reaction which characterise an acute disease. In this latter form it creeps on very insidiously, without much acceleration of pulse or heat of skin; the pain in the side amounts to that of a more severe colic, and the difficulty or cap of breathing is sometimes so insconsiderable as not to attract the individual's attention. However, his unhealthy pallid appearance, his loss of appetite, and languid look emphatically tell of mischief going on, and upon close examination it is found that the absence of fever is not constant, but that towards evening there is a febrile movement.

The anatomical characters of chronic pleurisy do not differ very widely from those of the acute form, especially when it has been a mere transition of one form of the disease into the other. The fluid effused however partakes more of a purulent character, and the false membrane is thicker and more condensed, owing to which the longer times it has been under the pressure of the effused fluid. The lung too is more compressed than in acute pleurisy, so much so that there is sometimes a complete annihilation of the respiratory function, and the pleura is generally reduced to a thin lamina, not exceeding six hairs in thickness, lying down along the spine.

The prognosis of chronic pleurisy is, generally speaking, very unpromising: in the ordinary course of the disease a subsequent collapse is the issue, the lungs being preyed upon by the appetite fails; the pulse is languid, although not much quickened; the legs swell, and the face becomes puffed; the expectoration often has a disagreeable allaceous smell. In order that the disease should be well-dealt with and the cure attended with the greatest success, it is necessary to improve the habit of body and air, and to suppress those constitutional symptoms, which most commonly accompany this form of the disease, recourse must be had to a nutritious but not a heating or exciting diet, and to the cautious exhibition of such tonics as the patient is able to bear. Change of air is often productive of the most decided benefit, and sometimes effects an almost instantaneous amelioration in the symptoms, by causing the night perspirations to cease, and the appetite to improve.

(See, besides Good, Study of Med., and Law, art. 'Pleurisy,' in Cyclop. of Pract. Med. (from which two works much of this article is abridged), Cruvielhier, art. 'Pleurésie,' in Diet. de Méd. Prat., 1832, and Laennec On Diseases of the Chest, translated by Forbes. Besides the ancient authors already quoted, the following references are given by Mr. Adams, in his 'Commentary to Paulinus Albinus:' Celsus, De Med., lib. iv., cap. 6; Pallas, De Vic. Ratione; Oribius, De Medic. Pract., lib. iv., cap. 5; Galen, De Med., cap. 4; Theophrastus, Proclus, cap. 4; Oribius, Math. Med., lib. iv., cap. 4; Theophrastus, Nonnum, cap. 129; Cauius Aurelianus, De Mortu. Acut., lib. ii., cap. 13; Otorius Haristianus, Ren. Med., lib. ii., cap. 4; Marcellus Virginius, Med., cap. 54; Serapion, Pract. ii, 21; Mesue, De Mag. Pract., cap. xii., cap. 8; Holy Abbas, Theor., lib. xi., cap. 21; Pract., lib. vi., cap. 13; Rhazes, Lib. Diet., cap. 54; Contin., lib. x.)

A very complete list of works on the subject of Pleurisy is given in Plouquet, Libr. Sanea Medic. Digesta, 4 vols. 4to. Tübingen, 1808-9; and a selection in the Appendix to the Cyclop. of Pract. Med.

PLEURORANCHIA. [SEMIPHYLLIDAE]

PLEUROBRANCHUS. [SHELL-PHYLLIDAE]

PLEURODICTYUM. Goldfuss employs this term for a species of coral from the transition rocks of the Hunsrück. (Petrefacten, tab. 38, f. 18.) It is said by Mr. Austen to occur in Madagascar.

PLEURODONTES. MM. Duménil and Bibron make their Iguanides Pleurodontes the first subfamily of the Iguanian Lizards, or Sauriens Eurotops.

This tribe corresponds to that designated by Wagner under the names of Pachygraulacea, Pachygraulacidae, Pachygraulacidæ, and by Wiegmann under those of Pachygraulaceae, Pachygraulacinæ, Pachygraulacinae, and Pachygraulacei, by Wiegmann under those of Pachygraulidae, Pachygraulideæ, and Pachygraulides.

The maxillary teeth of the species composing the Pleurodontidae are low and slightly curved, or free and enamelled part, more or less triboliated. There are only some genera in which the teeth are dentilated on the edges; nearly all have the palate armed with teeth, disposed in one or two rows on each side. Sometimes the tympanic membrane is stretched over the surface of the palate, sometimes it is simple or dentilated, and sometimes it is a little sunk within it. None of the known species are without an external ear. Among these Pleurodonta Iguanians alone are met
with species whose toes are enlarged nearly in the same manner in some genera [Sauria], all the Hexarept\* Iguanians, with the exception of one genus only (Brachylophus), are natives of the New World.

The following genera are arranged under this subfamily by M.M. Duméril and Bibron:

1. Amblyrynchus, Gray. Generic Character.—Skull of the lower region of the neck forming a transversal fold in front of the thigh. Paleate teeth. Maxillary teeth with a 'ricipiate' summit. A double row of femoral pores, tail long, compressed, covered with equal scales, which are imbricated and carinated, but not single.

2. Endleria, Gray. Generic Character.—Skull of the lower region of the neck forming a transversal fold in front of the thigh. Paleate teeth. Maxillary teeth with a 'ricipiate' summit. A double row of femoral pores, tail long, compressed, covered with equal scales, which are imbricated and carinated, but not single.

3. Endleria, Gray. Generic Character.—Skull of the lower region of the neck forming a transversal fold in front of the thigh. Paleate teeth. Maxillary teeth with a 'ricipiate' summit. A double row of femoral pores, tail long, compressed, covered with equal scales, which are imbricated and carinated, but not single.

4. Endleria, Gray. Generic Character.—Skull of the lower region of the neck forming a transversal fold in front of the thigh. Paleate teeth. Maxillary teeth with a 'ricipiate' summit. A double row of femoral pores, tail long, compressed, covered with equal scales, which are imbricated and carinated, but not single.

5. Endleria, Gray. Generic Character.—Skull of the lower region of the neck forming a transversal fold in front of the thigh. Paleate teeth. Maxillary teeth with a 'ricipiate' summit. A double row of femoral pores, tail long, compressed, covered with equal scales, which are imbricated and carinated, but not single.

6. Endleria, Gray. Generic Character.—Skull of the lower region of the neck forming a transversal fold in front of the thigh. Paleate teeth. Maxillary teeth with a 'ricipiate' summit. A double row of femoral pores, tail long, compressed, covered with equal scales, which are imbricated and carinated, but not single.

7. Endleria, Gray. Generic Character.—Skull of the lower region of the neck forming a transversal fold in front of the thigh. Paleate teeth. Maxillary teeth with a 'ricipiate' summit. A double row of femoral pores, tail long, compressed, covered with equal scales, which are imbricated and carinated, but not single.

8. Endleria, Gray. Generic Character.—Skull of the lower region of the neck forming a transversal fold in front of the thigh. Paleate teeth. Maxillary teeth with a 'ricipiate' summit. A double row of femoral pores, tail long, compressed, covered with equal scales, which are imbricated and carinated, but not single.

9. Endleria, Gray. Generic Character.—Skull of the lower region of the neck forming a transversal fold in front of the thigh. Paleate teeth. Maxillary teeth with a 'ricipiate' summit. A double row of femoral pores, tail long, compressed, covered with equal scales, which are imbricated and carinated, but not single.
Wiegm.). *Generic Character.*—Head subpyramidal, quadrangular, more or less depressed. Cephalic plates moderate, pointed; occipital plate in general very distinct. Palian teeth. Neck plaited on the sides, or entirely united. Membrane of the tympanum rather sunk. Body rounded or slightly depressed, covered with imbricated scales, the upper part not carinated, the lower slightly. Neither carinal nor dorsal crest. Toes simple. Tail long and conical, or moderate and slightly depressed. No femoral pores; anal pores in the males.

23. Tropidogaster, Cuv. (Sceloporus, Wiegm.; *Tropidurus*, part, Wagl.). *Generic Character.*—Head short, flattened, rounded in front; a great occipital scale and large subocular plates. No palatine teeth. Below the neck on each side a sort of oblique slit. Trunk short, depressed, with imbricated scales; the scales become smaller on the belly. Neither carinal nor dorsal crest. Tail stout, not much elongated, depressed at the base, rounded after. Femoral pores, but no anal pores.

24. Phrynosoma, Wiegm. (*Agames oricuilares,* Daudt part; *Topjays, Cuv., Fitzing.*). *Generic Character.*—Head short, rounded anteriorly, bordered posteriorly and laterally with large and strong prockles. Cephalic plates polygonal, equilateral, and subcircular occipital plate. No palatine teeth. Behind the neck plaited transversely. Border of the ear simple. Trunk short, oval, very much depressed, offering on each side a squamous dentilated arête. Upper part bristling with triradial tubercles springing in the middle and surrounded by imbricated scales. Neither carinal nor dorsal crest. Limbs very short; toes but little developed, dentilated on their borders. Tail hardly so long as the trunk, flattened, very wide at its root. A line of pores on each thigh.

25. Crotaphytus, Cuv. (Sceloporus, Wiegm.; *Ameiva, Wiegm.*). *Generic Character.*—Head short, depressed, rounded anteriorly, covered with unequal plates; a very much dilated occipital scale, and great subocular scutella, which are nearly square. Nostrils situated on the upper lip. No palatine teeth; all the maxillary teeth simple and conical. A subradial fold under the throat, followed by another which is transversal. Foldings on the sides of the neck. Borders of the auricular holes simple. Trunk not much elongated, compressed, enlarged on each side. The scales of the sides of the head small, numerous, serrated, imbricated, united. Neither carinal nor dorsal crest. Tail long, flattened, wide at its origin, narrowed throughout the rest of its extent. Limbs but little developed; toes very long and very narrow; nails very wooly (effiles). A long row of pores upon each thigh.

26. Tropidogaster (Dum. and Bibb.). *Generic Character.*—Head short, triangular, obtuse anteriorly. Subocular regions covered with a great number of polygonal plates much larger than the other cephalic scales, and carinated like them. A moderate occipital scutellum. Nostrils lateral, tubular. No palatine teeth. Throat with two or three transverse entire folds. One or two longitudinal plates on the sides. Membrane of the tympanum a little sunk. Anterior border of the ear subdenticulated. Trunk very slightly depressed; a fold of the skin along each side. Scales of the back small, uncinarced, and with their borders, as it were, swollen; scales of the belly with three carinatons. A small dentilated crest from the occiput to the end of the tail, which is long, subconical, very slightly depressed at its base, and surrounded with verticillated carinated scales. Toes and nails slender, very wooly (effiles). No femoral pores.

27. Microlophus, Dum. and Bibh. (Tropidurus, part, Wiegm.). *Generic Character.*—Head subpyramido-quadrangular, depressed, with plates unequal in diameter; a very dilated occipital scale; great subocular scutella. Nostrils lateral and rather tubular. Palatine teeth. Many cross folds under the neck. In front of each shoulder an arched fold descending on the breast, without uniting itself with that which is opposed to it. Anterior border of the ear dentilated, one or two pores; with subimbricated scales slightly carinated or united on the back, tailed and smooth under the belly. Skin of the side of the body forming two longitudinal folds. A very low dentilated or tuberculate crest extending from the extremity of the tail, which is long, subconical, and with carinated subverticillate scales. No femoral pores.

28. Erythrotoxis, Cuv. (Tropidurus, Wied., Wiegm., Wagl., part; Oplurus, Gray, part). *Generic Character.*—Head triangular, depressed, covered with unequal plates; a rather dilated occipital scale; moderate subocular scutella. Nostrils rather lateral, slightly tubular, and directed backwards. A single transversal plate beneath the neck, and two strong, elongated, each with several teeth. Trunk not much elongated, depressed, with small imbricated scales; the unders one smooth; those above surrounded with carina, forming converging lines towards the extremity of the body. Neither carinal nor caudal crest. Limbs of moderate length. Tail rather long, strong, conical, with subverticillate scales, which are imbricated and carinated. No femoral pores.

29. Stenomus, Dum. and Bibb. *Generic Character.*—Head depressed, triangular, slightly carinated, with equal plates; occipital scale hardly distinct; subocular scutella forming many longitudinal rows. Palatine teeth. Nostrils sublateral, tubular, directed backwards. A carinae arising forward, with subimbricated scales, which are imbricated under, with transversal folds under the neck, the sides of which are bevelled longitudinally. A very small dentilated crest extending from the nape to the tail. Trunk rather elongated, subtrihedral, with imbricated scales, smooth below, offering above carinae disposed in oblique lines; tail rather long, compressed, surrounded with verticillated scales formed by great spiny scales. No femoral pores.

30. Stenomus, Cuv. (Tropidurus, Wiegm., Fitzing, Gray, part). *Generic Character.*—Head quadrangular, more or less depressed, covered with nearly equal plates; occipital scale very small. Very much rather lateral. No palatine teeth. An arched fold before each shoulder. Skin of the lower part of the neck tense; the scales of the sides plaited longitudinally; cervical, dorsal, and caudal regions without a crest. Trunk nearly round, with the scales rather large, imbricated, carinated above, smooth below. Tail of moderate length, subconical, very slightly depressed at its base, surrounded with verticillations of spines. No femoral pores.


The generic character of this extensive subfamily has been given by the MM. Brome and Bonaparte. Few of the most remarkable forms have already been illustrated in this work. [Iguanidae.]

PLEUROYDRIA/NIA (from πλευρός, the side, and ιόν, poison of the side), called.

The term includes all those pains of the side which are unconnected with pleuritic inflammation, whether arising from a rheumatic affection of the intercostal muscles, neuralgia in the same parts, or any other cause not evidently pleuritic.
PLEURONECTIDAE, a family of fishes of the order Malacostraca and section Subbranchiata. This family contains the Soles, Flounders, and Turbots, and some other fishes, all of which are readily distinguished by the flattened form and in having both the eyes on one side. The sides of symmetry in the form of the head, the dorsal and anal fins extend the whole length of the back and abdomen respectively; the ventrals appear like a continuation of the anal; the branchiostegous membrane has six rays. The Pleuronectidæ are divided into the following genera:—

Genus 1. Platessa, in which the jaws are each furnished with a single row of obuse teeth; on the pharyngeal are generally some teeth like paving-stones; the dorsal fin is only extended in front to a line with the eye, and leaves, as well as the anal, an interval between it and the caudal. The form of the body is rhomboidal, and the eyes are usually on the right side.

To this genus belongs the common Plaice (Platessa vulgaris, Cuv.), which is usually about a foot or rather more in length; of a brown colour above, spotted with red or orange, but otherwise in general appearance resembles the turbot; the lateral line is curved above the pectoral fin; the body is smooth, and the teeth are blunt and contiguous.

This fish is very abundant on various parts of the British coast, and is said sometimes to attain the weight of fifteen pounds.

The Flounder (P. fluviatilis), Dab (P. limanda), and Lemon Dab (P. Microcephalus), are also examples of the genus Platessa.

Genus 2. Hippoglossus, Cuv. The species of this genus differ from the Plaices proper in having the body usually more elongated, and the jaws and pharyngeals armed with strong and pointed teeth.

The Holibut (Hippoglossus vulgaris, Flem.) is not uncommon on some parts of our coast, and is often exposed for sale in the London market. It is usually of large size. One specimen, taken in the Isle of Man, is said to have measured seven feet and a half in length. In the northern parts of Britain it is called the Turbot: the Holibut however is of a much longer form than the Turbot, and by no means equal in it to flavour.

Genus 3. Rhombus, Cuv. The species of this genus have the heads and pharyngeal bones armed with thickly set small pointed teeth; the dorsal fin commences immediately above the upper lip, and this fin, as well as the anal, extends very nearly to the tail. The eyes are generally on the left side.

The Turbot, Brill, Muller's Topknot, Bloch's Topknot, the Whiff, and the Scallidfish are British examples of the genus Rhombus.

The Turbot (Rhombus maximus, Cuv.), next to the Holibut, is one of the species of the Pleuronectidæ found on our coast, and is the most highly esteemed for the table. The Turbot is of a short and broad form, and rather deeper than many of the flat fishes. Its prevailing colour is brown, and the whole of the coloured side is studded with hard and roundish tubercles; the lateral line is considerably arched above the pectoral fin, and thence runs straight to the tail: it is called in Scotland the Rawn Fleuk and Bannock Fish. 'On the coasts of Durham and Yorkshire,' says Mr. Yarrell, 'a considerable fishery of Turbot is carried on by the fishermen of Hartlepool and Scarborough with long lines.'

A large portion of the Turbot produced in the English market is taken on or near the various sand-banks between the long line of our eastern shore and the coast of Holland.

The Brill (Rhombus vulgaris, Cuv.) is very similar to the Turbot in appearance, but inferior in flavour: it is common in the markets, and may at once be distinguished by its less broad form, the want of the osseous tubercles on the coloured side of the body, and the colouring, which is reddish or sandy brown varied with darker brown, and minutely spotted with white. It is moreover a smaller fish.

Genus 4. Solea, Cuv., contains the Soles, which are distinguished generally by their more elongated form and the blunt and rounded shape of the muzzle. The eyes, as well as the colouring, are on the right side; the teeth are small and confined to that side of the mouth which is opposed to the eyes; the dorsal fin commences in front of the line over the eyes, and extends, as well as the anal, to the tail-fin.

Cuvier separates as a subgenus from the Soles proper those species which have the pectoral fin on the side with the eyes very small, and that on the opposite side either rudimentary or altogether wanting. They are termed Monochirus.

The common Sole (Solea vulgaris, Cuv.) inhabits the sandy shores all round our coast, where it keeps to the bottom, and feeds mostly on testaceous animals and the fry of other fishes; as they will not readily take bait, they are almost entirely caught by trawling. 'Eighty-six thousand bushels of Soles were received at Billingsgate-market only within the last twelve months.' (Yarrell's British Fishes, vol. ii., p. 25.)

Another species belonging to this section, called the Lemon Sole (Solea pegaus, Yarrell), is occasionally taken with the common species, from which it differs in being rather broader and of a yellower hue.

Of the subgenus Monochirus, one species is found on the British coast, and is known by the names Variegated Sole, Red-backed Flounder, &c. (M. liguatus). There are the also generally arranged under the order Carnassiers, and some authors place them in the division Cetoroptera; but they differ from the Batids inasmuch as the toes of their anterior extremities, which are all furnished with sharp claws, are not more elongated than those of the hind feet; the membrane which occupies the interval between the extremities to the sides of the tail can hardly operate in executing more than the functions of a parachute.

PLEUROPTERA, the name of a tribe of quadrupeds generally known as Flying Lemurs (Galeopithes of Pallas), Flying Cats and Flying Foxes. They are generally arranged under the order Carnassiers, and some authors place them in the division Cetoroptera; but they differ from the Batids inasmuch as the toes of their anterior extremities, which are all furnished with sharp claws, are not more elongated than those of the hind feet; the membrane which occupies the interval between the extremities to the sides of the tail can hardly operate in executing more than the functions of a parachute.

Dental formula:—Incisors, 2; canines, 0—0; molars, 6—6 = 34.

This is the formula given by M. Lesson; but Cuvier, in his Regne Animal, states that the canines are dentilated and short like the molars. He states that the two upper incisors are also dentilated and much separated from each other; and that the six lower ones are split into narrow strips like combs, a structure peculiar to this genus.

M. F. Cuvier's formula is similar to that of M. Lesson, but it was probably inspired by the latter. M. F. Cuvier describes the 12 molars in both jaws as consisting of four false molars and eight molars. He tells us that in the upper jaw, the intermaxillary bone, though very extensive, has no teeth in its anterior part, in the posterior part there are two on each side. The descending line in the upper part of the lower figure marks the extent of the intermaxillary bone.

The dentition, as it appears to Mr. Waterhouse, is as follows:—

Inf. 2-2; canines 0-0; false molars 2-2; true molars 4-4; 4-4 = 34.

The same author observes that the six foremost teeth in the lower jaw of the Lemur (four only of which are, in his opinion, incisors; for he agrees with Geoffroy in considering the remaining two as canines) together bear a remarkable resemblance to a single incisor of Galeopithes. He compares the two canines to the outer laminae of one of these incisors. Like one of these laminae, the Lemur's canine is dilated immediately above the base, and has a longitudinal ridge above the upper side, whilst, the incisors, like the intermediate laminae, are grooved on the outer side near the apex. In their almost horizontal direction there is also a resemblance. In the number of teeth the Galeopithes agrees with the Lemur, except that the former the upper canines are wanting. In both these groups of animals the incisors of the lower jaw are, he observes,
opposed to a toothless portion of the intermaxillaries. (Zool. Trans., vol. ii., part 4.)

Geographical Distribution of the Genus, Habits, &c.—Cuvier and others state that the Galeopithicus live on trees in the islands of the Indian Archipelago, and there pursue insects, and perhaps birds, as their prey: judging from the dentition of the teeth with age, he thinks that they must also feed on fruits. They have a very large cecum. In their teeth they present many analogies to the Lemuridae.

Mr. Gray makes the Galeopithecidae the fourth family of the (quadrupedoid) Primates, and places it between the Lemuridae and Vespertilionidae. (Outline, &c., in Ann. of Philosophy, 1853.)

Speaking of the Galeopithicus of Pallas, Mr. Swainson observes: 'To give its most striking character in a few words, it is a lemur, with the limbs connected by a bat-like membrane, or, in other words, surrounded by a thin skin which they support, as the framework of an umbrella supports its covering. By this singular structure, the animal is supported in the air; yet without the power, like the bats, of sustaining a continued flight. Linnaeus places this remarkable genus with the lemurs, while every one must perceive its intimate affinity to the bats; like them also, these bat-lemurs are nocturnal and insectivorous; the mammae are pectoral; and they sleep suspended by their hind legs with their heads downward. Mr. Geoffroy St. Hilaire therefore justly considers them as the form by which the lemurs and bats are connected; while their greater resemblance to the former induces us to consider Galeopithicus as one of the aberrant types of the Lemuridae, among which Mr. Swainson arranges the genus, in the third part of his volume, between Aotes and Cheirogaleus. (Natural History and Classification of Quadrupeds, 1835.)

Three species have been recorded: 1, Galeopithicus rufus, Geoffr. Audub.; (Lemur solans, Lin.) 2, Galeopithicus paregatus, Cuv., Geoff.; 3, Galeopithicus Ternatensis, Geoff.: but the general opinion seems to have been that only one, the Lemur solans of Linnaeus, had been satisfactorily made out. In October, 1838, some specimens of Flying Lemurs were upon the table at a meeting of the Zoological Society of London, and in reference to them Mr. Waterhouse pointed out certain characters which appeared to him to indicate the existence of two species in those specimens.

He remarked that in systematic works three species of the genus Galeopithicus are described, founded upon differences of size and colour; as regards the latter character, he had never seen two specimens which precisely agreed; and, with respect to size, the dimensions given of two out of the three species are, he observed, evidently taken from extremely young animals. Mr. Waterhouse then proceeded to distinguish the two species on the table, and proposed for them the specific names of Temminckii and Philippinensis. The first and larger species measured about two feet in total length, and its skull was 2 inches 11/4 lines in length. The anterior incisor of the upper jaw is broad, and divided by two notches into three distinct lobes; the next incisor on each side has its anterior and posterior margins notched, and the first molar (or the tooth which occupies the situation of the canine) has its posterior edge distinctly notched.

This tooth is separated by a narrow space, anteriorly and posteriorly, from the second incisor in front and the second molar behind; the temporal ridges converge towards the occiput, near which however, he observed, they are separated usually by a space of about four lines. This is probably the Galeopithicus volans of authors; but the identity cannot be said to be certain.

The second species, G. Philippinensis, was described by Mr. Waterhouse as being usually about 20 inches in length, and its skull as measuring 2 inches 7 lines in length. He observed that this species may be distinguished from G. Temmincki by the proportionately larger ears and the greater length of the hands. The skull too he described as narrower in proportion to its length, the muzzle as broader and more obtuse, and the orbit as smaller. The temporal ridges, he remarked, generally meet near the occiput, or are separated by a very narrow space. The anterior incisor of the upper jaw is narrow, and has but one notch; the next incisor on each side is considerably larger, longer, and stronger than in G. Temmincki, and differs moreover in having its edges even—the same remark applies to the first false molar. In this species the incisors and molars form a continuous series, each tooth being in contact with that which precedes and that which is behind it. But Mr. Waterhouse concluded by observing that the most important difference perhaps which exists between the two species in question consists in the much larger size of the molar teeth in the smaller skull, the five posterior molars occupying a space of 10 lines in length, whereas in G. Temmincki, a much larger animal, the same teeth only occupy 9 lines. Several minor points of distinction existed besides those here mentioned. (Zool. Proc., 1839; and see further Zool. Trans., vol. ii., p. 335.)

Teeth of Galeopithicus, one-third larger than nature. (F. Cuvier.)

Skull of Galeopithicus Temmincki. a, seen from above; b, seen from below. (Waterhouse, Zool. Trans.)
Lower jaw and teeth of Galeopithecus Temminckii.

1. under side of the upper jaw; 2. side view of the same; 3. the three foremost teeth on either side of the upper jaw; 4, 5, outer and inner incisors of the lower jaw. (Waterhouse, Zool. Trans.)

N.B. Mr. Waterhouse remarks that the two first of the three foremost teeth of the upper jaw, commencing with the smallest tooth, are situated in the intermaxillary bone, and are therefore incisors. He adds that it is worthy of observation, that the posterior of these two teeth (on each side) has a double fang.

Skull of Galeopithecus Philippensis.
a, upper side; b, under side.
to be a good teacher, and the student acquired more knowledge of his art during an extensive tour which he soon made in Italy, then the land of song, by hearing the best works of the celebrated composers, and more taste by listening to the distinguished performers of that country, than by any lesson he had received in his own country.

In 1783, Pleyel was appointed Maître-de-Chapelle of Strasbourg cathedral, and there composed many masses and motets, the whole of which were destroyed in a great fire shortly after they were written. During the next ten years he produced nearly all his works which carried his name into every city in Europe. In 1791 he visited London, on the invitation of the managers of The Professional Concert, who engaged him as a kind of rival to Haydn (whose services were engaged by Salomon for his concerts), and composed for them three symphonies, for which and his personal assistance he received a large sum, which he invested in the purchase of an estate near Strasbourg.

[Concert, Haydn.] In 1793, during the phrenzy of the French revolution, he became a suspected person, and, having been several times denounced, at length deemed it prudent to fly, but was pursued and taken. He then pleaded his acquiescence in the new order of things; nevertheless, as a sort of his supporter he was required to set a kind of dramas for the anniversary of the 10th of August. This he accomplished under the surveillance of two gendarmes, and saved his life. Thoroughly alarmed however at being even now more notorious in some of the provinces than in the capital, he sold his property, went to Paris, and entered into a widely extended commercial speculation as publisher of music and manufacturer of piano-fortes. This proved successful, and after a long, active, laborious career, he retired to an estate near Paris purchased by the fruits of his talents and industry, and indulged his taste for agriculture. But the revolution of 1830 excited in him fresh though unnecessary alarm, and violently agitated a frame not naturally strong. His health failed, and, after much anxiety and suffering, he died, in November, 1831. He left one son, who inherited some portion of his father's genius, but soon abandoned music as a trade, and following his parent's steps, pursued it very prosperously as a trade.

Pleyel, in the height of his popularity, was over-valued, and afterwards, when the tide of fashion turned against him, was under-rated. Through nearly all his compositions a stream of agreeable melody flows; they are marked by a style peculiarly his own, generally light, sometimes very trivial, but occasionally bold and vigorous. A few of his quartets possess much beauty, and when the prejudices against him are subdued by time, these, as well as his admirable Concertante, will be revived. The same set of justice will perhaps, at no distant period, be done to his Sonatas dedicated to the queen of England, as well as to those with Scottish airs, the comparative simplicity of which has for the present caused them to be thrown aside. Had posthumous fame been more his aim than immediate profit, Pleyel had that within him which might have secured the attainment of a considerable share of lasting celebrity.

PLICA POLONICA is the name given to a disease which is chiefly remarkable for the sticking together and matting of the hair, and which is peculiarly frequent in Poland: a few examples of it have been met with in Tartary, among the lower orders of the Russians, and in Hungary, and fewer still in Switzerland and France.

The disease chiefly affects the scalp; the hair grows to an unusual length, is matted together by a sticky and most offensively-smelling secretion, and is commonly infested with vermin. Indeed, the symptoms of the disease, as far as the hair is concerned, are only those which would result from excessive neglect of cleanliness, and hence many who have seen numerous cases in Poland, believe that they are only produced by the dirty habits of those affected, who, it is well known, if the disease do not spontaneously make its appearance, spare no pains to produce it. So great is the prejudice in favour of Plica entertained by the lower order of Poles, who regard it as affording a certain security from all other sickness and misfortunes, that they will through their whole lives endure the inconvenience and misery of carrying about huge masses of filthy sticking hair many feet in length, rather than submit to the removal of it, which is necessary for their relief.

There is sufficient evidence however that in many cases the Plica is not merely the result of uncleanness; a kind which has been called false plica is undoubtedly often so produced; but in many instances the secretion of the viscous material from the scalp is preceded by the general symptoms of slight fever, headache, and increased sensibility of the skin. The scalp is extremely tender, and bleeds on the slightest injury, and the least pulling of the hair excites exquisite pain. When the secretion commences, these symptoms commonly subside. The only treatment which is known to be constantly beneficial is the removal of the hair, and strict cleanliness; other means must be decided in each case by the general state of the patient's health. The popular notion entertained in Poland, that dangerous diseases will follow the cutting of the hair, is entirely without foundation.

PLICATULA. [SPONDYLIUM.] PLICIPENNIS, according to Latreille, the third section into which the Neuropterus insects are divided. The insects belonging to this section are well known to anglers by the name of Caddis-fly, and in the larva state they are called caddis-worm or cadem-worm. They constitute the genus Phrygania of De Geer, and have been raised to the rank of an order by Moser. Kirby and Spence and Dr. Leach, being the order Trichoptera of their systems.

The Phrygania, or Caddis-flies, are distinguished from other Neuropterus insects by the absence of mandibles, and in the structure of their mouth; in fact they evince an approach to the Lepidopterus insects as well as in some other characters; the wings are semitransparent, and when closed meet at an angle, like the roof of a house; they are usually hairy, hence the name Trichoptera; the posterior wings are longitudinally folded, and usually broader than the anterior pair; the head is small and furnished with two simple eyes, situated on the vertex, besides the ordinary compound eyes; the antennae are very long and thread-like, and composed of very numerous indistinct joints; the palpi are four in number, the maxillary have often five joints in the females, and the labial palpi are three jointed.

The larva, or Caddis-worm, always lives in the water, and encloses itself in a cylindrical case, open at both ends, and composed of pieces of stick, small shells, and various other substances, which the insect joins together by a silken web.

![Fig. 1. Larva of a species of Phrygania, magnified; 2, case inhabited by the larva; 3, the pupa, magnified; 4, the perfect insect with the wings expanded; 5, elotis, with the wings in the ordinary position when the insect is at rest.](image-url)
It never quite this case, but when it wishes to move it
pro-
duces the fore part of the body, which is furnished with six
tolerably long legs, and crawls about with the case attached
to the hinder part, it being held by means of two hooks
situated at the last segment of the abdomen. The form of
the larva is nearly cylindrical, but slightly compressed; the
head and first three segments of the body (which in fact
constitute the thorax) are coriaceous, the remaining seg-
ments are soft. When about to change into the pupa state,
the larva attaches itself to some substance in the water, and
closes the ends. The transformation is what is termed
complete, the pupa resembling the perfect insect, except
in having the wings imperfectly developed, and also in
having the eye博物馆. Dorsocentral is the name given
which makes its escape from the case, that it may swim
to some dry situation when about to assume the perfect
state.

Genus 1. Phrygania are very numerous, and M. Pictet states
they abound more in the northern than in the southern
parts of Europe. Their larvae being always aquatic, they
are generally found near the water; they fly chiefly in the
evening, and are not unfrequently seen in immense num-
bers. The author just quoted, M. Pictet, has published a
quarto volume,* with numerous plates, in which, after giving
a detailed account of the anatomy and habits of these in-
sects, he traces very many of them through all their stages.
In the monograph, which is one of the most perfect monographs
ever published on the subject, the Phryganiidae are divided into eight
genera, as follows:—

Genus 1. Phrygania proper, distinguished by the superior
wings, having some transverse nerves near the bifurcation
of the wings; the posterior wings folded; palpi three-
jointed; antenna setaceous, and equal in length to the
wings; max-
illary palpi but slightly pubescent, those in the males three-
jointed, and those of the female having five joints; the
terminal joint is ovate, and shorter than the two preceding
taken together. Of this genus upwards of thirty species
are known in Europe, some of which are the largest of the
Phryganiidae.

Genus 2. Myxostoma, Latreille. Anterior wings straight
and broad, the males, having a few transverse nerves; posterior
wings much folded; antenna setaceous and slender, longer
than the wings; maxillary palpi five-jointed in both sexes,
long and pubescent.

Genus 3. Trichostoma, Pictet. Anterior wings short,
without transverse nerves; posterior wings but slightly
folded; antenna comparatively thick and short, the basal
joint very hairy; maxillary palpi three-jointed in the male,
the terminal joint stout and more densely clothed with hair on
the upper surface.

Genus 4. Sericostoma, Latreille. Anterior wings with-
out transverse nerves; posterior small, and but slightly
folded; antenna stout and short, and having the basal joint
long and thick: the maxillary palpi in the male shaped
like the bowl of a spoon, and unifying to form a rounded
muzzle.

The larvae of the species of this genus inhabit a case
which approaches to a conical form, and is more or less
curved; it is composed of pieces of sand and small stones
joined together. The perfect insect is slow in its move-
ments.

Genus 5. Rhyacophila, Pictet. Anterior wings without
transverse nerves; posterior wings straight, of the same
form as the anterior pair, and almost destitute of folds;
антenna moderate, maxillary palpi five-jointed in both
sexes, the second joint almost as short as the first, and the
terminal joint ovate; abdomen often terminated by coriace-
ous appendages.

This genus contains many species, all of which are of
small size.

Genus 6. Hydrophylus, Pictet. Anterior wings without
transverse nerves; posterior wings much folded, the ante-
rior, maxillary palpi five-jointed in both sexes, the terminal
joint almost equal in length to the other joints taken
together, and very slender.

This is also a numerous group. The larvae live almost
always in running waters. The perfect insect is often spotted.

Genus 7. Psychomyia, Latreille. Anterior wings straight,
pointed, and without transverse nerves; posterior wings
resembling the anterior, and not folded; antenna mo-
derate, maxillary palpi five-jointed in both sexes, the ter-
minal joint long and slender.

Genus 8. Hydriocaela, Dalman. Anterior wings attenu-
ated and pointed, very hairy, and with the nerves indis-
putably larger, than those of the posterior wings; antenna
short and filiform, maxillary palpi five-jointed in both
sexes, the terminal joint ovate.

PLINIUS VALERIA'NUS, a name mentioned in a
Latin inscrip-
tion found at Como (Gruner, t. 635), and given to the
author of a work entitled Medicinae Libri Quinque.' Nothing is known of his life, but the work is supposed
by some to have been written about the fourth century A.D.
It is a book on domestic medicine, compiled from Pliny the
elder's works, and others, and of much value.

The first three books are taken up with a list of
diseases, beginning with the head, and descending to the
feet, and contain an account of a great number of medi-
cine, partly taken from the older Pliny and partly from
later writers. The fourth book treats of the properties of
plants according to their names, and is in a great measure
taken from Galen. The fifth book, which is almost entirely
extracted from Alexander Trallianus, is upon diet as
accommodated to different diseases. There is a little book
with Just. Godofr. Ginz, entitled 'De Autocere Opera de Re
Medica,' vulgo P1inio Valeriano scripserit,' Lipsi, 1736, 4to.,
in which, with much learning and ingenuity (but, in Hal-
low's opinion, unsuccessfully), he tried to establish a work in question. The Christian physician
named Silurius, who is mentioned in the preface to
Mar-
celius Empiricus. It was first published at Rome, 1569,
fol., by Th. Pignicincus: it was reprinted (and, according
to Haller (Biblioth. Palatina) many times), by P. Bonon, 1516, fol. It is also to be found in some of the col-
lections of the old medical writers, namely, in that of Torinus
(Thorri, Basili, 1526, fol.; and in the Aldine, Venet.,
1547, fol.)

PLINILYN. [CARDIGANSHIRE; MONMOUTHSHIRE.]
PLINTH. [COLUMN; CIVIL ARCHITECTURE.]

PLINY THE ELDER. CAIUS PLINUS SECUNDUS was
born, as is commonly supposed, A.D. 23. The place of his
birth is very uncertain, but has been fixed at St. Saturi,
learned controversy. The antient writer of his life, ascribed
to Sustennus, and after him St. Jerome (in Chron.), call
him a native of Como (Novocomensis); while in an old
anonymous life he is said to have been born at Verona,
and in the preface to his 'Natural History' he calls Catullus
(who was certainly born there) his fellow-countryman
(cort-
neraneus). A full account of the arguments on both sides is
given by Rezzonico, in his 'Dissertationes Plinianae,' who
himself inclines to the hypothesis of mode of
name is known of the events of Pliny's public life; we are merely
told that he was of a noble family, and after distinguishing
himself in the field, and filling the office of sugur at Rome, was appointed, in the latter part of his
employment however he did not suffer to hinder his
studies; and his manner of life, as it is described by his
nephew (Plin., Epiat., iii. 5), exhibits a degree of in-
dustry and perseverance scarcely to be paralleled. In sum-
mer he always began his studies as soon as it was light;
in winter, generally at one in the morning, but never later
than two, and often at midnight. No man ever spent less
time in bed; and sometimes he would, without retiring
from his books, indulge in a sleep, and this perhaps in his
studies. Before day-break, it was his custom to wait
upon Vespassian, who likewise chose that season to transact
business; and when he had finished the affairs which the
emperor committed to his charge, he returned to his
studies. After a slender repast at noon, he would
frequently, in the summer, if he was disengaged from busi-
ness, recline in the sun, during which time some author
was read to him, from which he made extracts and ob-
servations. This was done, and was observed by all who
read it; for it was a maxim of his, that 'no book was so bad
but something might be learned from it.' When this
was over, he generally went into the cold bath, after which he
ate a slight repast. He enjoyed his food, and if it had been a new day, resumed his studies till supper-
time; when a book was again read to him, upon which he would
make some remarks as they went on. His nephew men-
tions a singular instance (Epiat., iii. 5) of this kind.
How wonderous he was to him, and how accurate his
knowledge. His reader having pronounced a word wrong, some one
at the table made him repeat it; upon which, Pliny asked

2 M 2
that person if he understood it, and when he acknowledged that he did, 'Why then,' said he, 'would you make me go back again? We have lost by this time our leisure, and some of our horses have run away, and the rest always rose from supper by day-light; and in winter, as soon as it was dark. Such was his way of life amidst the noise and hurry of the town; but in the country his whole time was devoted to study without interruption. When he entered into a subject he was, as he assured his students, never to be disengaged from all other thoughts, and a secretary or amanuensis constantly attended him in his chariot; and that he might suffer the less interruption to his studies, instead of walking, he always used a carriage in Rome. By this mode of study, he found leisure to write a great number of volumes. The circumstances of his death, like his manner of living, were very singular, and are also described at large by the elegant pen of his nephew. He was at that time, with a fleet under his command, at Misenum, in the Gulf of Naples, his sister and her son the younger Pliny being with him. On the 21th of August, A. D. 79, about one in the morning, he took leave of his sister and retired to a very unusual size and shape. He was in his study; but immediately arose, and went out upon an eminence to view it more distinctly. It was not at that distance discernible from what mountain this cloud issued, but it was found afterwards to proceed from Mount Vesuvius. Its height resembled that of a pine-tree; for it shot up to a great height in the form of a trunk, which extended itself at top into a sort of branches; and it appeared sometimes bright, and sometimes dark and spotted, as it was either more or less impregnated with earth and cinders. This was a noble phenomenon for the philosophic Pliny, who immediately ordered a light vessel to be got ready; but as he was coming out of the house with his nephew for his observations, the mariners belonging to the galleys stationed at Retina earnestly entreated him to come to their assistance, since that port being situated at the foot of Mount Vesuvius, there was no way for them to escape but by sea. He therefore ordered the galleys to be put to sea, and went himself on board, with the intention of assisting not only Retina, but several other towns situated upon that beautiful coast. He steered directly to the point of danger, from which others were flying with the utmost terror, and with so much calmness and presence of mind, as to be able to make and dictate his observations upon the motion and figure of that dreadful scene. He went so near to the mountain, that the cinders and cinders of fire and heat was sent up, and fell into the ships, together with pumice-stones and black and white pieces of burning rock: they were likewise in danger not only of being aground by the sudden retreat of the sea, but also from the vast fragments which rolled down from the top of the most distant mountains. Here Pliny stopped to consider whether he should return, to which the pilot advising him, 'Fortune,' says he, 'befriends the brave; carry me to Pomponianus.' Pomponianus was then at Stabiae, a town separated by a gulf which the sea, after several windings, forms upon that shore. He found him in the greatest consternation, but exhorted him to keep up his spirits; and the more to dissipate his fears, he ordered, with an air of unconcern, the baths to be got ready. After having bathed, he sat down to supper with apparent cheerfulness. In the meanwhile the eruption from Vesuvius flamed out in several places with much violence, which the darkness of the night contributed to render still more visible and dreadful. Pliny, to soothe the apprehensions of his friend, assured him it was only the burning of the villages which the country-people had abandoned to the flames: after this he retired, and had some sleep. The court which led to his apartment being in the most part filled with stones and ashes, if he had continued there any longer it would have been impossible for him to have made his way out; it was therefore thought proper to awaken him. He got up to his apartment without any assistance, and being led by the voice of his friend, who were not sufficiently unconcerned to think of going to bed. They consulted together whether it would be most prudent to trust to the houses, which now shook from side to side with frequent and violent rockings, or to fly to the open country; but the latter was the more to be recommended, as all their defence against the storms of stones that fell around them. It was now day everywhere else; but there a deeper darkness prevailed than in the most obscure night, which however was in some degree dissipated by torches kindled by the inhabitants of other towns, which immediately went farther upon the shore, to observe if they might safely put out to sea; but they found the waves still running extremely high and boisterous. There Pliny, taking a situation in the middle of the town, and of his house, was thrown into a sleep that was spread for him; when immediately the flames, and a strong smell of sulphur which was the forerunner of them, dispersed the rest of the company, and obliged him to rise. He raised himself, with the assistance of his servant (for he was not so strong as formerly), and instantly fell down again, suffocated, as his nephew conjectures, by some gross and noxious vapour; for he had always weak lungs, and was frequently subject to a difficulty of breathing. As soon as it was light again, which was not till the third day after, his body was found entire, and without any marks of violence upon it, exactly in the same posture that he fell, and looking more like a man asleep than dead.

Such is a sketch of the life given by the younger Pliny, in a letter to Tacitus (Epist. vi. 16), of the death of this remarkable man. The titles of several of his works are given by his nephew (Epist. iii. 5); of these the only one that is still extant is his 'Natural History,' which may be the 'Naturalis Historia.' It is a species of work as varied as nature herself.
style enhances still more his profound learning. He not only knew all that in his age could be known, but he had that facility of thinking on a grand scale which multiplies science; he had that nicety of reflection on which depends elegance and taste; and he communicates to his readers a certain grand boldness of style, both in his method of discoursing and the germ of philosophy. His work, no less various than nature herself, always paints her in the brightest colours. It may be called a mere compilation of all that had been written before him, a copy of all that was excellent and useful to be known; so that he was always most original, and his compilation contains things put together in so novel a manner, that it is preferable to the greater part of original works which treat on the same subjects." (Buffon, Discours Pre-"eminent, H. N.)

The character given by Curier (Biogr. Univers., tome xxxv.) is not so favourable, but is more correct. 'Pliny's great work,' says he, 'is at the same time one of the most precious monuments left us by antiquity, and a proof of the astonishing learning of a warrior and a statesman. In order justly to appreciate this vast and celebrated compilation, it is necessary to consider the plan, the facts, and the style. The plan is immense,' &c. &c. 'It was impossible but that the author, in his treatment of a number of objects, however rapidly, should record a multitude of remarkable facts, which are to us the more valuable, as he is the only extant author who mentions them. Unhappily the way in which he has chosen to record these facts with them, lose much of their value by the mixture of truth and falsehood which is met with in almost equal proportions, and especially by the difficulty (and in most cases the impossibility) of recognising the precise creatures that he means to describe. Pliny was not an observer, like Aristotle; still less was he a man of genius, capable, like that great philosopher, of seizing the laws and relations which have guided nature in her productions. In general he is only a compiler, and indeed for the most part a compiler who has not himself any idea of the subjects on which he collects the testimonies of others, and therefore cannot appreciate the truth of these testimonies, nor even always understand what they mean. He is short hand, as an artist, and is only more after having wasted a great deal of time in making extracts, has ranged them under certain chapters, to which he has added reflections that have no reference to science properly so called, but display alternately either the most superstitious credulity, or the declamations of a discontented philosopher, which finds fault continually with mankind, with nature, and with the gods themselves.'—A comparison of his extracts with such of the original authors as are still extant, is too simply summarily made; or the decision far from selecting either what was most important or most exact. In general he prefers whatever is singular and marvellous, whatever helps him in establishing the contrasts he so much delights in, or the reproaches he is so fond of using. He is uncertain and contradictory; he makes the same degree of faith to everything that he mentions, but it is quite by chance that he believes or doubts; and it is by no means the most childish stories that always provoke his incredulity.'—Another great fault in Pliny is that he does not always give the true sense of the authors that he translates, especially in the designation of different species of animals; and though we have so few materials remaining to enable us to judge of this kind of error with any degree of certainty, it is easy to prove that in several instances he has mistranslated the names of the animals mentioned by Aristotle. It must then be confessed that, as far as his facts are concerned, the only part of his work which has any real interest for us in the present day is that which relates to the manners and customs of the antients, and to their proficiency in different arts, besides some historical and geographical details, which are to be found nowhere else. 'With respect to his style, wherever he introduces general ideas or philosophical views, his language assumes an energy and vivacity, and his thoughts acquire an unexpected boldness, which makes some amends for his droll enumerations, and excites, him, in the opinion of many of his readers, to a loose and unscientific information. He is perhaps too fond of point, and contrast, and emphasis; and there is in some places an obscurity, which results less from the nature of his subject than from a desire of being more striking on another writer for the same censure; but he is always grave and noble, and everywhere shows a love of justice and respect for virtue, a horror of the cruelty and meanness of which he had before his eyes such irrefragable examples, and a contempt for the unbridled luxury which had in his time so deeply corrupted many people. In these respects he cannot be too much condemned; and in spite of the defects which we cannot but recognise in him when we consider him as a naturalist, we must nevertheless confess that of all the men after the Augustan age, he deserves to be regarded as one of the most valuable and most worthy to be ranked among the classics. It must however be confessed, adds Curier, that Pliny, an artist or a writer, does not acknowledge no god other than the World; and few philosophers have set forth the system of pantheism with more copiousness and energy than he has done in the second book of his Natural History.'

Not the least important part of Pliny's work is his comprehensive history of the arts amongst the Greeks, in books xxxiv., xxxv., and xxxvi.; for though so often minute and circumstantial in his details of unimportant matters, and often neglective and careless about subjects of the highest interest, Pliny's account is upon the whole clear and succinct, and evidently contains many extracts from the writings of antiquity artists themselves.

The errors that we have to reproach him with are either important inaccuracies inseparably connected with so great an undertaking as his 'Natural History,' or some few misconceptions owing to his want of a practical acquaintance with the arts, and which may be easily remedied by an artist. At the present day it cannot be doubted that Pliny has extremely credulous and his matter irrelevant, and his accounts are occasionally such a confusion of tradition and legend, that it is almost impossible to distinguish what is authentic from what is fabulous; such as the fabulously imitative arts (xxxv. 12, 43). It is also evident that he frequently did not clearly understand what he has endeavoured to convey to others, and the consequence is, that he is sometimes unintelligible; this may be partly owing to the corrupt state of his text. He also labours under opinions upon the most trivial objects and examples of purely mechanical excellence, and passes cursorily over the greatest works, as the paintings of Polygnotus at Delphi (xxxv. 9, 35) and the Jupiter of Olympus (xxxvi. 5, 4). Of the Laocoön however he says (xxxvi. 5, 4), that as a work of art it was superior to any production either of painter or sculptor; and with him the art of Apelles is synonymous with unrivalled excellence.

He commences his historical sketch, but more particularly that of painting, from the time of Polygnotus and Phidias; everything that took place before that time he has given in a summary, and has preferred to leave untouched either the works of sculptors, or first efforts of art. His immediate authorities probably go back no further than an account of an earlier period. Concerning this period however he has given us many valuable though unconnected remarks. Yet, when we consider the original sources that he makes use of, we cannot but applaud the industry and sagacity of both painters and sculptors, the works of Apelles, Euphoranion, Antigonus, Xenocrates, Pasisile, and Musenachmus, all of which are mentioned by Pliny himself (and there were many others that he might have consulted) (De Pict. Vert. ii, 3), the volumes of Melanthius, Pamphilus, Protegenes, and others—we cannot help feeling surprise that he has given us so little, and we are induced to conclude, with Rohde, 'that he was more given to knowing much than of knowing well.' However, out of about one hundred artists of great celebrity, of whom more than the third were painters, the rest sculptors, statuaries, and workers of gems, &c. and more than twice that number of artists of less note, whose names have been handed down to us, Pliny has scarcely omitted one name of importance, but has on the other hand preserved notices of the works of many artists of whom we have no mention whatever in any other antient writer. In his dates he seldom errs.

The following is the opinion of Flaxman upon this part of Pliny's 'History;' perhaps in such matters the greatest critic of modern times. He says the whole is 'arranged with great attention to the natural improvements in chronological order, with such perspicuity of his that it is absolutely comprehended at a glance, without reference to any former work. Even, from the brevity of the work, we do not find all we wish for,—yet, by attending to the information prior and subsequent, we shall easily be enabled to supply the defect of many omissions of Pliny.'

The 'Geography' of Pliny is an important part of his 'Natural History,' but the same general remarks will ap-
apply to it that apply to the whole compilation; it is the work of a man who had abundant materials before him, but either knew not how to use them or did not take pains enough. This geographical sketch, which comprehended the then known world, is much too brief to be perspicuous; so much is evident from the list of maps, and the few paragraphs in the manner of a bare catalogue of names, and if we had no other guides, it would continually mislead us. Pliny's description of what he calls Graeca, which commences with Attica, is a good example of his careless and confused compilation; yet he has, even in his 'Geography,' preserved many curious facts, and he must have often had access to excellent materials. As examples of this we may mention his remarks on the Niger (Niger); his observation (vi. 17) that the Greek tongue was first taught by the Jews in Lydia; in the language signifies 'snowy,' which is quite correct; his remarks on Taprobane (Ceylon), and generally his remarks on India; his account of the Atlas, founded on the authority of Sestius Paulinus; and other things of the like kind, which render this part of his compilation valuable for incidental facts, though it is of no value as a systematic work.

The number of editions that have been published of his work is immense, and more than twenty appeared before the end of the sixteenth century. There are only the two most curious and the most valuable here can be noticed. The first edition was published at Venice, 1459, fol. by Joannes de Spira. There is an ample account of it in Schwerger's 'Historia Typographica,' and Bibdin's 'Editiones Graecae et Latin Classics,' who says that 'the elegance of the Roman type, the regularity of the press-work, the strength and tint of the paper, the breadth of the margin, and the quantity of text which each page exhibits, afford altogether a pleasant and agreeable perusal.' In the present day this edition is of great worth; the Bipont editors thus observe, from Rezzonico:—"Vitioso expressa multa, sed tamen multa meliora quam in aedibus editionibus; unde ad textum Plinii constitutendum necessaria est.' The second edition, which is also described by Schwerger and Bibdin, and is of a volume of great rarity, was printed by Swaynehyn and Pannartz, Rome, 1470, fol. Those most worth mentioning for their critical excellence are, that by Hardouin, Paris, 1685, 4to., 5 vols., or 'Mansi edition'; that by Paris, 1725, 8 vols., 3 vols., and 'is by far the more copious, splendid, and critical performance.' That by Franzius, 1800, 10 vols., Lips., 1778-1791; and that published by Panckoucke, Paris, 1800, 20 vols., 1829-33, with a new French translation by Ayasson de Grandsaigne, and copious notes by many of the most eminent scientific men of France. The edition by Sillig, Lips., 1831-36, 12mo., 5 vols., is particularly worthy noticing on account of the various Readings of a MS. at Bamberg, which had never before been collected, in which not only inserts words and clauses in several passages that had never been suspected of being unused (thus proving beyond a doubt that much of the obscurity of Pliny's style may be attributed to the state of the MS.), but also after several sentences at the end of the whole work, and concludes with the following epilogue:—Salve parent rerum omnium, Natura, teque nobis Quiritum solis tuas, fate, Perhaps the two most useful works in illustration of Pliny are the 'Exercitationes Pliniane' of Salmassius, 2 vols. fol., Paris, 1629; and the 'Disquisitiones Pliniane' of Latour-Rezzonico, 2 vols., fol., Paris, 1703-1704. It has been translated into almost all the languages of Europe by Arbuthnot. The famous Hymain M. Ishak (better known perhaps by his Latinized name Jean

Pliny the Younger, Caius Plinius Secundus, was born at Comum, a town on the lake Liris in Italy, in 63 or 62; for he himself tells us (Ep., vi. 20) that he was in his eighteenth year when the extraordinary eruption of Mount Vesuvius took place which occasioned the death of his uncle; and this event was in a.d. 79.

Of his father nothing is known, except that his name was Caius Cæcilius, that he was of equesrian family, and that he was appointed by the Emperor Domitian to the post of praetor at Rome. He married Plinia, the sister of Pliny the Elder, at whose house, after losing her husband, she, with her son, took up her abode. The young Cæcilius was adopted by Pliny (Ap., v. 8), and was therefore often called by his name.

His education commenced under the care of his mother and uncle. Verгинius Rufus, of whom his pupil has left a grateful record (Ep., i. 1), was left his tutor. His youthful attainments were of no ordinary kind, for he composed a Greek ode to his adopted father on the occasion of the completion of his second volume of 'Natural History, and studied rhetoric under Quintilian and Nicetes. At the age of nineteen he began to practise in the court of the Cæsar, and he subsequently appeared as an advocate in several cases before the Senate; but though he may have had a competent knowledge of law, it is clear from his own letters that he had no great capacity for difficult legal questions. The following references will show in what kind of cases he was chiefly employed:—v. 8; ii. 14; iv. 16; i. 11; iii. 4; iv. 20; v. 9; vi. 18.

In his twenty-first year he went as military tribune into Syria, where he met with Euphrates the stoic and Arminius, whose society he made available to his improvement. Pliny was a man of a very particular and exact taste, and was extremely particular about his dress and the detail of his life. It was this exactness which was his strong point, which was his main excellency, which made the worth of the editor. The next thing of the state, and had attained the rank of senator, as is inferred from his letters. (iii. 20; iv. 23.)

He cultivated a friendship with many eminent men, particularly with Tacitus, whom he exceeded by none in acts of beneficence, whether public or private. He was twice married, though his wife used her own name (Calpurnia) is mentioned by name, and she was a very accomplished woman. He had no children.

The time and other circumstances of Pliny's death are uncertain. It is however generally believed that he died about the end of Trajan's reign, which was a.d. 116.

Of many works written by Pliny, we have only his 'Epistles.' Instead of a collected work, where each letter is an independent piece, he has rather published them in chronological order. His son, Pliny the Younger, has, from the days of Tertullian, been mentioned with peculiar interest by the Christians of his day. His other son, Plinius Secundus, of whom we have already spoken, was a man of the highest character, a man of strong religious convictions, and a man of unexampled holiness. He was the father of the Christians of his day. He seems to have been a genuine Christian, and in his works, he shows a genuine love for the religion, though he considered it only an innocent superstition.
The materials for Pliny's life may be collected from his Epistles, from which a brief notice has been drawn up by Cellerius, and one more elaborate by Masson; there is also a very complete Life of Pliny, with abundant references to his letters, prefixed to E. Thierfeld's German translation of the 'Epistulae' (Leipzig, 1724). Of the editions of the 'Epistles' and Panegyric' together, may be recommended those of Christopher Cellerius, 12mo., Leipzig, 1693; Hearne, with Life, by Masson, prefixed, 8vo., Oxford, 1763; Gordin, 2 vols. 8vo., Leipzig, 1806.

PLOMAC/OCRUS (Leuckard), a mollusk placed by Cuvier in his family Nudibranchiata.

PLOCRUS. [Fringillidae; Weaver Birds.]

PLOCK. [Poland.]

PLOCK, the capital of the government of the same name, is situated on the Vistula. It has about 8000 inhabitants, of whom 3000 are Jews. Plock is the see of a Roman Catholic bishop, who resides at Pultusk. There are in the town 11 churches, 2 convents, an episcopal palace, a Pariat gymnasium, a seminary of secular priests, and various useful institutions, and an orphan-house, a lunatic asylum, a literary society, &c. The inhabitants subsist partly by agriculture and partly by a brisk trade with Danzig and other places.

PLOMEREL. [Morbihan.]

PLOMBGOMME—Hydrated Aluminate of Lead. This mineral is in small globular and reniform masses, composed of many thin concentric layers. Fracture conchoidal, uneven. Hardness sufficient to scratch fluor-spar, but not glass. Colour yellow, sometimes tinged with brown, and possessing the appearance of gum-arabic. Translucent. Specific gravity 4. 9.

PLOOM. When heated by the blowpipe, it loses water, but is insusceptible. With borax it gives a transparent glass.

It is found in the French department of Côtes du Nord.

Analysis by Barrueli.—

<table>
<thead>
<tr>
<th>Substance</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alumina</td>
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</tr>
<tr>
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<td>40°</td>
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<tr>
<td>Water</td>
<td>16°</td>
</tr>
<tr>
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<td>0°</td>
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<tr>
<td>Linseed and oxides of manganese and iron</td>
<td>1°</td>
</tr>
<tr>
<td>Silica</td>
<td>6°</td>
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PLOT, ROBERT, LL.D. (born 1641, died 1696), a name connected with literature and science in various departments, was the son of Robert Plot, of Sutton-Barnes in Kent, and born in that county. He had his early education in the school at Wye, from which he passed to Magdalene Hall, Oxford. He took his Master's degree in arts and both his degrees in law, and then removed to University College. In 1667 he published a 'Natural History of Oxfordshire,' intending to publish similar works on other counties, a work which gained for him considerable reputation. In 1682 he was elected one of the secretaries of the Royal Society, and in the succeeding year was appointed by Ashmole the Master of the college of which he had founded at Oxford. About this time also he was chosen professor of chemistry in that university. In 1685 he published a tract on the origin of springs, and in 1688 a 'Natural History of Staffordshire,' on the whole of his work on Oxfordshire.

So far his life is that of a naturalist and man of science; but having attracted the attention of the duke of Norfolk by an encomiastic speech which he pronounced when the duke was admitted to the degree of D.C.L. in the University, he chose to retire from the society, and in 1688 was made by King James II. historiographer royal, a privilege being granted to him of access, without the payment of fees, to all the depositories of the public records. In 1694 he was invited to write a history of the title of Mowbray Herald Extraordinary, when he was also made registrar of the Court of Honour. What he might have done in the department of history and antiquities, we cannot determine, as he lived not long after he thus deviated from his original path, dying at his seat at Sutton-Barnes, at the age of fifty-five. He can hardly be said to have established a permanent reputation.

PLOTINA. [TRAJANUS.]

PLOTTING, the most celebrated writer and teacher of the Neo-Platonists, and at Alexandria, who wrote his panegyric in Egypt, a.D. 204. At the age of twenty-eight he betook himself to the study of philosophy, and attended the lectures of most of the teachers who then flourished at Alexandria. He attached himself more particularly to Ammonius, the founder of the eclectic school, and studied for eleven years under that master. The expedition which the emperor Gordian undertook against the Parthians in a.d. 243 furnished an opportunity, which Pluton had long coveted, of forming a personal acquaintance with the philosophers of the East, whose doctrines were so much commended by the philosophers of the Alexandrian school, and were supposed by them to have formed the basis of many of the speculations of their great master Plato. Accordingly, Pluton joined the army of Gordian, which he accompanied as far as the Euphrates, and when the emperor was murdered there, he fled first to Antioch and then to Rome. During the next ten years he resided at Rome, Pluton contented himself with giving oral instruction to his pupils, but at last, in his fiftieth year, he was induced by the importunities of Porphyry, the most famous of his disciples, to consent to write some treatises. He remained at Rome till his death in a.d. 274, and during all that time he was busily engaged as teacher of the eclectic or Neo-Platonic doctrines. He was a great favourite with the emperor Gallienus, who was on the point of allowing him to rebuild and inhabit a noble palace in Campania, in order that he might try the experiment of establishing an Utopia there after the model of Plato's republic. He died in Campania, not on the scene of his projected city of philosophers, but at the house of a friend, who maintained him in his old age, and was engaged to write the history of the life, history, and philosophy of his master. His discourses and treatises, which were published during his sufferings under an accumulation of diseases.

The works of Plutonius consist of fifty-four books, which were divided into six 'Enneads,' or sets of nine books, by his pupil Porphyry, and have been preserved in a tolerable girdle order, and to correct the obscurities and other faults of style under which they laboured. He is perhaps one of the most mystical and confused authors in any language, and we shall not weary at this if we recollect some of the facts which Porphyry has told us about him. We have already mentioned that he did not begin to write till he was fifty years old, and then he seems to have set down his thoughts quite random and as they occurred to him. His handwriting was very bad, and his spelling very indifferent; his eye-sight was so weak that he could hardly read his own writing, and he could never be brought to revise his works. When we add to this that his subjects vary the most unexpected and could not be fitted into a system of order and unity; 'On the essence of the soul,' 'On the unity of the good,' 'Whether there be many souls or only one soul?' and so forth—it will perhaps be considered that he is not a very inviting author. Nevertheless, he has found many admirers, and has, either directly or through his follower Proclus, exercised a most important influence on the opinions of more recent philosophers, especially among ourselves. Cudworth, Henry More, Norris, Gile, and others were students of Plutonius and Porphyry. He died of pleurisy at Rome in 274, and was buried on the door of the school of philosophy.

A superb edition of the works of Plutonius, in 3 vols. 4to., has been recently published at the Oxford University Press, with this title: PLOTTUS. [PELECANIDAE.]

PLOUGH. That the plough is an instrument of the highest antiquity is apparent both from the oldest writings that we possess and from the existing monuments of Egypt. The migration into Europe of the name and origin of the plough in the branch of a tree dragged along the ground, in which the stumps of a smaller branch made furrows as it went on. It seems indeed probable that some
accidental circumstance first suggested this mode of stirring the earth to prepare it for receiving the seed.

The oldest forms of the plough of which we have any description in ancient authors, or which are represented on monuments and coins, are very simple: a mere wedge, with a crooked handle to guide it, and a short beam by which it was drawn, form the whole instrument. The light Hindu plough, now in use in many parts of India, seems to differ little from the old model.

Before we enter into any details it may be as well that we describe the different essential parts of a plough, by the names which are usually given to them.

The body of the plough is that part to which all the other parts are attached. The bottom of it is called the sole, or blade, to the fore part of which is affixed the point, or share; the hind part of the sole is called the heel. The box, which advances forward from the body, serves to keep the plough in its proper direction, and to the end of it are attached the oxen or horses which are employed to draw it. Fixed in the beam, in a vertical position, before the point of the share, with its point a little forward, is the coulter, which serves to cut a vertical section in the ground, while the point of the share, expanding into a fio, separates a slice by a horizontal cut from the subsoil or solid ground under it. The mould-board, or turn-furrow, is placed obliquely behind the fin, to the right or left, in order to push aside and turn over the slice of earth which the coulter and share have cut off: it thus leaves a furrow, wherein the share has passed, of which furrow is intended to be filled up by the slice cut off from the land by the side of it, when the plough returns. The stills or handles, of which there may be either one or two, are the means of convening the ploughman, by keeping it in the line required and at a regular depth in the ground. The single still appears to be the most antient form.

Wheels are a modern invention in comparison with the other parts. They support the end of the beam, and prevent it from going too deep into the ground or rising out of it while the plough is going on. The greatest improvements introduced into modern ploughs are in the shape of the mould-board, or turn-furrow, of which we shall take particular notice, and the contrivances for regulating the line of draught, so as to make the plough go at an equal depth, and cut off a regular slice of equal breadth, without any great force being applied by the ploughman who holds the stills.

The Hindu plough consists of a slight beam, often without any coulter, a narrow share, and a corresponding still. The old ploughs were made of iron. It is remarkable that a man can readily carry it upon his shoulder. When it is at work it is usually drawn by a small buffalo, and sometimes by a man or a woman. This instrument is rendered very effectual to cut a furrow in a shallow or light soil, or in the mud produced by irrigation where rice is cultivated. It does not act as our ploughs do, nor does it turn over a regular furrow, but it acts more like one of the lines, or teeth, of some of our more complicated instruments called cultivators or grubbers, with which the earth is stirred without being turned over.

The Chinese plough resembles the Hindu in its simplicity. The earth is turned over by holding the instrument obliquely, and much depends on the art of the ploughman, in whose hands it is like a stout shovel pushed through the ground by a horse or ox. The sole is not straight, but rounded, like the bottom of a boat. The work done by this instrument is not unlike the furrows which are made in the sand at the bottom of the sea when a ship drags her anchor.

The ploughs in use in different countries in Europe have undergone little change for many centuries; it is only lately that any attempt has been made to vary the old forms.

The Roman plough, such as is described by Virgil in the "Georgics" (i. 174), is still used in many parts of France, under the name of Araire Romain. It consists of a beam (bac), a share (furrow), a share (stilt), and a handle or still (stillo). The office of the turn-furrow is performed by two pieces of wood about six inches long projecting obliquely upwards, and very properly called teeth (dentalia), E F (Fig. 3). The sole of the plough AB has two pieces of wood CG and DI fixed to it on each side, forming an acute angle with it, in which the teeth are inserted. This exactly answers the description of Virgil, "Dupluii aptantur dentalia dorsi" (the teeth are fitted to the double back).

The teeth help to push aside the earth to the right and left, and the instrument resembles what is called a moulding plough, which is used in throwing the soil aside against young plants growing in rows, as turnips, potatoes, &c. A chain or pole connected with the end of the beam was hooked to the middle of the yoke on the neck of the oxen, and thus the plough went on making parallel furrows, so near to each other that the preceding furrow was partially filled with the earth which the dentals pushed aside. The point was in the same horizon as furrows in light mellow soils, which had been long in cultivation and had more the texture of garden mould than of stubborn clay.

The small double mould-board plough, common in other parts of France, is evidently taken from this. The teeth not being sufficiently strong, a slanting board was substituted on each side, and wheels were added, to diminish the labour of the ploughman. The stilt remained the same at the place where it is attached to the plough, but higher up it was divided into two, like a fork, for the convenience of holding it with both hands. This plough acts exactly like the other, it is stronger and better adapted for heavier land. Neither of them goes much deeper than four or five inches, leaving shallow parallel ridges, in which the seed falls, and is buried by light wooden furrows, which are drawn over the land after sowing. This is an imperfect tillage, the bottoms of the furrows being only partially stirred. The broad flat share, and the single mould-board which turns the earth completely over, after lifting it up, is a far more effectual instrument, and has been adopted wherever agriculture has made any improvement. This plough more nearly imitates the digging with a spade; and the more perfect the imitations, the better is the work.

The mould-board of a modern plough is either fixed on one side, or made so as to be shifted from one side to the other. In the first case half the furrow-axles lie on one side and half on the other, and there is of necessity a double furrow where they join. When it is desirable that the surface should be quite flat, and the furrow-axles all in one direction, the mould-board must be shifted at every turn, and a plough which admits of this is called a turn-wrest plough.

It is evident that the mould-board of a turn-wrest plough must be so constructed as to act with either side uppermost; it can therefore have only a very slight convexity to push over the slice cut off by the coulter and share; and a considerable force is lost by the obliquity of the action in doing so. The share of this plough is pointed like a lance, or presents a flat edge like a broad chisel, according as the soil is light or heavy. The point of the coulter is placed on line with the side of the point which is nearest to the unploughed land, and this is done by means of a piece of wood A B (Fig. 3), which presses it against one side or the other of the mortice in which it is placed in the beam CD, by changing the position of the pieces AB to the other side of the projection.
On the beam, and pressing the head of the coulter F to the other side. The mould-board has a hook at the fore part, which goes into a staple in the side of the fore-part of the body of the plough towards the preceding furrow: a piece of wood on the inside of the mould-board keeps it at the proper angle with the line of the sole.

The defect of this plough is in its weight and clumsiness more than in the shape of the mould-board; for when it is made lighter, it is not so bad a construction as appears at first sight, and it does its work very neatly in heavy loams with a dry subsoil. If, instead of one mould-board, two were used alternately, of a better shape for turning over the furrow-slice, this plough would be much improved.

The form of the turn-furrow is of material importance, for on this depends not only the perfection of the work, but also the lightness of the draught. When we follow a plough working in a mellow soil which slightly adheres to the plough, we often perceive that, instead of being turned aside, the earth is carried forward, and only falls off when the accumulation of it becomes heavy enough to overcome the adhesion. It does not slide off from the mould-board itself, but separates from the earth which adheres to the latter; thus showing that the shape is defective, and giving good hints for its improvement. But as the same plough will sometimes turn over the same earth better when it is either drier or moister, it is very difficult to determine, by experiment only, what may, on the whole, be the best shape. A little reflection and the application of scientific principles may greatly assist us here.

It is not sufficient, however, to find the curve which will make the plough go through the ground with the least force. The plough must also perform its work perfectly, and if anything is to be sacrificed, it is better to employ more power than to plough the ground badly. After having ascertained the mechanical principles which bear on the working of the plough, we must observe its action carefully, follow the plough day after day, in different soils and different weather, and thus we may be led to observe all the circumstances which attend its operation, and correct any mistakes which an erroneous theory might have led to.

Many attempts have been made to ascertain the exact curve which the turn-furrow should have to perform the work well and at the same time to produce the least resistance. The difficulty of the problem lies in determining the data, or principles on which the investigation is founded; and these are so various, that it is not surprising that no very satisfactory conclusion has yet been obtained. We will make an attempt at a solution from a simple examination of the motion to be produced in the portion of earth to be turned, which we call the furrow-slice. We shall suppose this separated from the adjacent soil by the vertical cut of the coulter, and at the same time from the subsoil by the horizontal cut of the share; a section of the slice, by a plane at right angles to the line of the ploughing, will be a parallelogram ABCD (Fig. 6), the depth AC being the thickness of the slice, and AB its width. Confining our attention to this section of the slice, the object is to move it from its position A B D C, as cut off by the coulter and share, to that of B' D' C', where it is inclined at an angle of 45° to the horizontal line; the surface AB (B' D') being laid on the slice previously turned over, so as to bury the grass or weeds which might be rooted there, exposing the roots to the sun and air. The more uniformly this motion is produced, the more regularly the successive sections follow each other, the less power will be required to turn over the whole slice. The motion of C D round the point D must therefore be uniform. If the turn-furrow is horizontal at the point where it joins the share, and of the same width as the furrow-slice, it will slide under the slice; and if the vertical sections of its upper surface, at equal distances from the share, are inclined at angles regularly increasing with this distance till it arrives at the perpendicular, the turn-furrow will, as it advances, turn the slice from a horizontal to a perpendicular position: the section of it will then be D C B. The inclination of the section of the turn-furrow must now be to the other side, forming an obtuse angle with the section of the sole, until it has pushed the slice over at the required inclination of 45°.

Fig. 6.

Ransom's Keatsish Turn-Wrest Plough.
which theory and experience have shown to be the best adapted to expose the greatest surface to the action of the atmosphere, and likewise to form the most regular furrows for the reception of the seed, which the harrow can then most readily bury.

The surface of this turn-furrow is curved in the form of the spiral thread of a screw, such as would be generated by a line moved uniformly forward in a direction at right angles to its length, while it revolved uniformly round one of its extremities. This surface is easily constructed mechanically thus: take a rectangular parallelogram $ABCD$ (Fig. 7) of the width of nine inches, or as wide as the intended furrow, and of a length equal to four times the width. Bisect $BC$ in $E$ and $DG$ in $F$; at $F$ raise a perpendicular $FG$ to the plane of the rectangle, and make it equal to $CE$. Join $EG$ and produce it to $K$, making $FK$ equal to $FE$. Join $KD$. Draw from every point in $CD$ lines at right angles to $CD$, meeting the line $EK$ in different points; these lines will form the required surface.

![Fig. 7.](image)

The line $KD$ will be found inclined $45°$ to the horizon at the angle $KDH$, which is the inclination at which the furrow-slice is most advantageously laid. To those who are not familiar with solid geometry, these lines may be easily exhibited by means of a wire inserted at $E$ and bent at a right angle at $K$, inserting the bent portion into the board $ABCD$ (Fig. 8) at $D$, so that it shall be inclined $45°$ at $D$, lying in the direction $EK$ in Fig. 7 and 8. Care must be taken that $GF$ be equal to $CE$ and perpendicular to the board.

It is evident, that as the plough moves on, a particle at $E$ will slide along the line $EK$, become at $G$ perpendicular to the bottom of the turn-furrow, which should be parallel to the sole, and at $K$ be at an angle of $45°$ with that line. If the slice were a solid substance, this line $EK$ would be all that is required to turn it in its proper position; but the soil is generally loose, and would crumble to pieces, a support must be given to it by a surface at least as wide as the slice. This surface is generated by drawing lines from different parts of $DG$ at right angles to this line, and meeting the line $KE$ (Fig. 9). These lines will be at different angles to the horizon, nearly horizontal at $C$, where the front of the point begins perpendicular at $F$, and at $45°$ beyond at $D$. The curve thus generated will be found to turn over soils of a moderate tenacity very perfectly. If it is very light, the surface may be formed by arcs of circles with a considerable diameter, the concave part upwards; if it is very tenacious, the convex part of the arc may be upwards. Thus the surface may be varied without altering the fixed line $EK$. The annexed figures (10, 11, 12) will explain this. The distance of the perpendicular $FG$ from the line of the share may also be varied, either shortening or shortening the turn-furrow, as experience may show to be most advantageous.

![Fig. 8.](image)

**Horizontal Plan of the Plough.**

![Fig. 9.](image)

**Sections of the three different turn-furrows at different distances from the heel.**

Fig. 10.  
![Fig. 10.](image)  
Fig. 11.  
![Fig. 11.](image)  
Fig. 12.  
![Fig. 12.](image)

A plough has been lately constructed on this principle by Messrs. Ransome of Ipswich, at the suggestion of the writer of this article, and exhibited at the meeting of the Royal Agricultural Society of England, held at Cambridge, July 15, 1840. It promises to realize the expectations formed of it.

In soils of a loose mellow nature it answers completely, and does the work more perfectly than any other plough. It unites the parallelism of the sole and bottom of the turn-furrow of the Flemish plough with the improved shape of the turn-furrow. By adopting the variations in the shape of the turn-furrow which we have suggested, this plough may be adapted to any soil, and be used with or without wheels.

Ploughs were formerly made of wood having those parts covered with iron where the greatest friction takes place, the share and coulter only being of iron; but in consequence of the greater facility of casting iron in modern times, most of the parts are now made of metal. The beam and stils are still usually of wood, but even these are now sometimes made of wrought-iron. The advantages of iron are, its durability and the smaller friction it occasions when once polished by use. The inconveniences are, the additional weight of the instrument, and consequent greater friction of the sole. Recent experiments have proved this to be greater than was generally suspected. A great improvement has been introduced by making the points of the shares of cast-iron, which, by a mode of casting the lower surface on a plate of metal, makes one surface much harder than the other; and as the softer surface wears more rapidly, a sharp edge is always preserved.

The different parts of a plough are now usually cast, so that if any one fails or wears out, it can be instantly replaced by moving a few screws or bolts. This is a very great saving of time and expense; for before this, every time an accident happened to any part of the plough, it took a long time to repair it, and in the mean time the land was suspended, often at a very critical time of the year. There is another advantage in having the essential parts of cast-iron. If any particular shape has been once discovered to be the best for any part, the part is preserved without having to make a new plough made on the same pattern, and with respect to the turn-furrow this is of the greatest importance.

The stils of the plough are mostly of wood. Where the soil is light and crumbling, without stones, as in Norfolk, a single handle or stilt is sufficient; but where some force is occasionally required to prevent stones or other obstacles from turning the plough out of its course, two stils are most convenient, placed at a more obtuse angle with the sole of the plough.

The force required to draw a plough depends not only on the nature of the soil, but also on the shape of the plough, and especially on the position of its different parts with respect to each other, so that they do not counteract each other.

If a plough were drawn in the direction of the sole, the obliquity of the turn-furrow would cause it to turn towards one side, and would require a considerable force to keep it straight. In order to prevent this, the line of draught is placed at an angle, which varies with that of the turn-furrow and the force required to push the furrow-slice over. To adjust this angle, so as to cause the plough to keep in the intended line, there is a contrivance at the end of the beam to change the position of the ring by which the plough is drawn to the right or left of the line of the beam, and another by which it may be raised or lowered. In most ploughs the beam, having been originally set at a small angle with the sole towards the right, has an arch of wood
ar iron at the end, as in the annexed Figure 13. An iron, shaped as in Fig. 14, is made to embrace the beam, to which it is attached by a pin (a), round which it turns as a centre. Another pin (b) passes through one of the holes in the circular end, and keeps the iron in any required position to the right or left of the line of the beam. The end of this iron, which is called a bridle, has several projecting hooks.

When the plough is found to take too much land, that is, tends to increase the width of the slice cut off by the coulter, the bridle is shifted to the left by moving the pin (b) into another hole; when it goes out of the land, as it is called, that is, diminishes the width of the furrow-slice, the pin is moved a hole or two to the right, until the plough has no tendency to deviate to either side. If it inclines to rise out of the ground, the ring is shifted in the iron bridle and placed in a hook or notch higher up; if, on the contrary, it dips too deep, the ring is hooked lower. Thus a plough may be made to go straight and at a regular depth, without any more force being applied to the stilts than is required to counteract inequalities in the land, or accidental obstacles, such as stones or roots, which might throw the point of the share up, and thus increase the friction of the sole on the ground, and consequently the labour of the horses. In the Rutland and Bedford ploughs two wheels are connected with the beam, one of which runs in the furrow to the right, and the other on the unploughed soil to the left. When the plough has been well adjusted, and the larger wheel runs in the angle of the furrow, it acts as a gauge to regulate the width of the slice as well as its depth: in very uniform soils without stones, the plough, when set in the proper direction, will make a very straight and even furrow parallel to the one in which the wheel runs, without any person holding the stilts; so that all that is required is to turn the plough at the end of each furrow, and set it in to the proper line to form the next. As this admits of very correct adjustment, no unnecessary force is required to draw the plough; and hence this plough appears to be the easiest for the horses; and if the wheels are not very heavy, and the plough is of a good form, it certainly requires less power to move it than many which are without wheels; and it is far superior to the old clumsy wheel-plough, the beam of which rests on a heavy carriage, without being firmly attached to it. This, instead of lessening the draught, increases it by all the pressure of the beam upon the carriage, besides the weight of this last and of the wheels. There are some very irregular and stony soils, where a common swing plough cannot be kept steady without the help of wheels, and where it would not be so convenient to have the beam fixed on the wheels. In this case a separate carriage is necessary, that the ploughman may have a full control in the plough, or turn it to either side to avoid any considerable stone or other obstacle. As a general rule, it may be safely asserted that a slight but strong swing-plough, in the hands of a clever ploughman,—with one wheel in particular soils, but, in general, without any wheel,—will effect its purpose with the greatest precision, and the least exertion of the horses drawing it. Theory and practice agree in this; and if any experiments appear to throw a doubt upon it, we shall probably find some circumstances which have given the plough out result, when wheel-ploughs have appeared to require the least

**Fig. 13.**

**Ransom's Rutland Plough.**

**Fig. 16.**

**Bedfordshire Plough with Wheels.**
power of draught. But wheels have one advantage: they will enable an inexperienced man to make better work than he could possibly do without them; and that too with less labour to the horses; because, from his want of skill, the swing-plough would be continually subject to sudden deviations, requiring him to use his strength to counteract them; and the effort of the ploughman adds to the labour of the horses.

Some interesting experiments have been made on the draught of different ploughs by Mr. Hanley, M.P. for Lincoln, and Mr. Pusey, M.P. for Bath, which are detailed in the third and fourth numbers of the Journal of the Royal Agricultural Society.

Without entering into any comparison of ploughs different in form, it is evident that the shape of the plough must vary with the nature of the soil which it is to turn up. A light soil must be shovelled up; a swallow one may be turned over with any kind of mould-board; a very stiff tenacious soil which adheres to any surface pressed against it, will be more easily turned over by a few points of contact which do not allow of adhesion. Hence the point and turn-furrow have been made of all imaginable shapes, and while one man contends for a very concave form, another will admit of nothing which is not very convex.

That plough will not have the least draught which is best suited to the soil which it has to move. The lighter the plough is, consistently with sufficient strength, the less draught it will make, and other circumstances remaining the same. Lightness and strength combined are consequently great advantages, and if a very light plough does its work as well as a heavier, there can be no doubt that it is preferable. Durability is nothing compared with the saving of one horse; and to that respect it is well to plough every year than to keep an additional horse all the year. If a wooden plough is found to be more easily moved than an iron one, there can be no doubt which should be preferred.

The Flemish plough is made of wood, and is very light; the share and coulter only are of iron, besides a thin sheet of iron over the mould-board, which is shaped as if it had been rolled obliquely over a cylinder, a shape well adapted to sounding the soil and leaving a little or less mellow and crumbling, the great object is to bring to the surface that portion which has lain buried, and has not served to nourish the preceding crop, and to bury that which has produced vegetation, and in which the roots of various weeds have established themselves. When manure is to be covered with a certain depth of earth, a more complete subversion is required, in order that no part of it may remain uncovered.

When the land is in a compact state, from the roots which penetrate it, the usual plough will not be so effectual for covering the seed, much greater nicety is required to lay the slices at a certain angle so as to leave regular lines or depressions in which the seed may fall and be readily covered by the soil. In this case the angle of 45° is found to be the most convenient, at which the furrow-slices may be laid against one another. The field will then have the appearance of being laid in small ridges as in the annexed figure, all towards the same side if ploughed with a turn-west plough, or towards a middle line if a plough with a fixed turn-furrow has been used. To produce this regularity, the end of the turn-furrow is made press on the slice turned over; and some ploughmen fix a piece of wood or iron to the end of the turn-furrow, which makes a great difference in the furrows of the next one will be laid upon it. This prevents useless openings between the slices. It adds no doubt to the draught, but it makes better and nearer work.

When a shallow turn-furrow is used on the sward, which is reversed by a single ploughing, it is necessary that the furrows should be completely turned over and laid flat. To do this, and at the same time to bury all the grass, requires the furrows to be very equal and parallel; so that when a roller has gone over the land, it is perfectly flat, without breakers between the slices which are turned over. It requires a good ploughman to do this perfectly.

When clover-leaf or old grass is ploughed up, it is difficult to bury all the grass which grows on the edge of the slice; and if it remains exposed, it will grow and increase, to the detriment of the corn. To prevent this, a wing is sometimes added to the side of the coulter, a few inches from the point. It cuts a small horizontal slice off the surface before the soil is turned over, and this falls into the bottom of the furrow and is buried there. The coulter with such a wing is called a skim-coulter, because it, as it were, skims the surface.

This instrument may require an additional horse to be put to the plough in tenacious soils, but this cannot be avoided. There is no doubt that very more horses should be put to the plough than can do the work; but whatever be the number required, the work must be done well. There is no saving in doing the work imperfectly. The discussions about the number of horses are, however, very easily settled, if the nature of the soil were sufficiently taken into consideration. The shape of the plough may make some difference, but the tenacity of the soil makes a much greater. It is however not a little surprising that there should be so little variety in the width of the furrows. It would appear as if there were a law prohibiting furrows less than eight inches wide, or more than ten: a furrow-slice five inches wide and ten deep requires no more power than one ten inches wide and five deep. It is true that a plough will not do more than half an acre at most in a day with narrow furrows; but if two horses will do this, and two ploughs instead of one be used, with one man and two horses each, an acre will be ploughed by four horses and two men, which is the number usually employed, when the furrows are deep and nine or ten inches wide; but the land will be much better stirred, and laid more even. The Romans ploughed with deep narrow furrows, and varied the width of the plough every year to try to improve the soil. The plough need not be narrower for this work; for if the first furrow be made wide enough, the plough can deepen it by a second turn in it, and a trench is formed in which the next slice falls, and is pushed aside by the tail of the turn-furrows, so as to leave another trench open ten inches wide.

Suppose A BCD (Fig. 18) the section of the first wide furrow, and a slice A E F B is cut off the solid side of the land half the width of the trench; the mould-board pushes this earth, after it has been turned over, into the space DCab, marked with the dotted line, and in doing so beats and crumbles it, leaving a fresh trench A F B equal in width and so the whole field may be improved without difficulty. In these cases out of ten, where the soil is properly cultivated, and ploughed in a proper state, this mode of ploughing would be found a great improvement, and equal to a trench ploughing, or subsoil ploughing. Where the farms are small and few horses are kept, deep ploughing is not practicable with the usual width of furrow; but with a narrow furrow, the land may be moved to a very great depth with a couple of horses. The plough must be made sharp and narrow, and the turn-furrow not much curved, so as rather to push the earth aside than to lift it.

A very little attention was formerly paid to the straightness of the furrows. Theiard asserted it to be folly to follow the boundary of the field, which was seldom straight; and this practice increased gradually till no straight furrow was to be seen; and there was a prejudice, if not a superstition, in favour of crooked ridges. Those defended them who defended the least crooked furrows, and in that respect the general objection was not better than the straight, the difference was unimportant; but no curved lines can be laid so perfectly parallel as two straight lines. Every deviation from parallelism causes a defect in the contact between the sub-soil and the upper surface, and a lessening of the powers of the draught. A superficial observer would not perceive this, but minute examination proves it. Hence equal and straight furrows are a sign of good ploughing.

When the land is not too dry and more moisture remains in it, after continued rains, it is useful to promote vegetation, it may be ploughed quite flat. This may be done by a plough with a moveable turn-furrow, or by plough-
ing in a continuous spiral from the centre to the circumference, or the reverse. In this case straight furrows cannot be made. The best way is to draw a furrow the whole length of the field in the middle, and plough towards this from both ends, if the field be long, or from the middle to plough into several broad stiches, each a certain number of perches in breadth. A perch (16 feet) is a very common width for a stitch, and convenient to guide the sower or the driving-machine. But on moist impervious subsoils it is necessary to lay the land in a rounded form, in order to let the superficial water run off into furrows, from which it is conducted by proper channels into the ditches. In this case half a perch is a common width for each stitch, or land, as it is sometimes called. It requires some practice to lay up a land in a rounded form from a flat surface. After cross-ploughing and harrowing, the first furrow is drawn wide and shallow, and the earth is thrown upon the surface to the right: when the plough returns, it takes another furrow about nine or ten inches from the first, laying the earth or furrow-slice somewhat obliquely over the first. At the next turn another slice is laid, meeting the last at an angle, the first slice being quite covered by the two last. This now forms the crown of the ridge; and the succeeding slices are laid obliquely to each other, and whether the line of the furrow is a straight or a convex one, the whole width is obtained. Another land is now begun at the distance of a quarter of a perch from the last furrow, and laid exactly in the same manner. When the two lands meet, the intervening furrow, which had been purposely left shallower, is deepened; and there is a furrow between every two furrows, the bottom of which is considerably below the bottom of the other furrows. When this field is ploughed again after harvest, the work is reversed; the furrow between the lands is filled with the first slice, and another is placed over this, which now becomes the crown of the land to be formed: this is called ploughing crown and furrow. When the lands are ploughed towards the crown, it is called gathering. By gathering several times in succession, the soil is much raised at the crown at the expense of the sides. This was the old practice, when lands were laid very wide and very high; in common fields, the land or stitch was often the whole width of the possession, from which came the name of land. In Scotland they are called rigs.

One of the most useful operations in ploughing land is cultivating it, that is, breaking it into small portions so much more completely stirred; and if any part has been left solid without being moved by the plough-share, which is called a balk, it is now necessarily moved. The leaving of balks is a great fault, and is owing to the sole of the plough being narrower than the furrow-slice, and the wing of the point too short, or to the ploughman not holding his plough upright. The share should cut the ground to the whole width of the furrow, that no roots, stones, docks, or other large weeds may escape and grow up again. The Roman authors recommended the use of a sharp rod or stake inserted horizontally into the ground, to discover if there were any balks, which, with their ploughs, must have been left if the ploughman was not very careful to make close and small furrows. Many ploughmen hold the plough in an oblique position; the bottom of the furrow is consequently not level, and the soil is not stirred equally. This is a great fault, especially in well-grazed land; for furrows thus become channels in which the water remains, not being able to run over the inequalities of the bottom. It is of no use to lay the surface convex, if the solid earth below lies in hollow bottom; for such bottom is not very careful to make close and small furrows. Many ploughmen hold the plough in the newly-ploughed till, it meets the solid bottom which the plough has gone over; if it can run over this into the deeper furrows between the stiches, it evaporates or runs off, and the land is left dry, and so consolidated as to let the water run along the surface without sinking to any depth; but if the bottom is uneven, it remains in the hollows, and stagnates there, to the great injury of the growing crops.

There are various modes of ploughing land when it is intended to pulverise and expose it to the air, in summer, or the frost in winter, to purify and fertilise it. To expose as a great surface as possible, the whole field is laid in high and narrow ridges, bringing to the surface all the fertile portion of the soil. This method is also employed to allow so as to deepen the productive portion and give more room for the roots to spread in. The simplest method of increasing the surface exposed, when the land is first broken up to ploughing, has been to make very bars in grass, and in a foul state, is called ribbing. The plough then takes up a slice, which it lays over flat on the adjoining surface. It does not cover this with the next slice, as if it were beginning the crown of a stitch, but it takes another slice at some distance, and thus one parallel to the first, likewise laid flat on the solid part. When the whole field has been so ploughed, the surface consists altogether of ridges and furrows; but only half the surface has been ploughed. No grass appears, if it has been well done, the unploughed strips being covered by the slices raised by the side of them, the two surfaces with grass on them cover each other. It is left in this state till the grass is rotten, and when the soil is broken to pieces by heavy drag-harrows, the land can be crossed ploughed and cleaned or followed in dry weather.

There is another mode of ridging, when the land has been divided into one or two ploughings, in order to expose it to the frost in winter, and to the sun in summer. The plough is not what similar to ribbing, but after the first slice is turned over, another is added, as deep as the plough can be made to go, so as not to bring up the subsoil: by this means the whole surface is laid in high ridges and deep furrows, and when this ploughing is reversed, in spring, the soil which has been exposed to the frost and wind is mixed with the rest, and tends greatly to mellow it. This is excellent practice for turnips, if the land has been well cleaned. The manure, being distributed in the deep furrows, is covered by the plough right and left, or at one operation by a plough with a turn-furrow on each end, which divides the ridge and leaves half of it in each contiguous furrow. This plough is usually called a double mould-board plough, and is extremely useful in many operations of husbandry.

In order to save hands and expedite the tilling of the land, ploughs have been contrived which make two or more furrows at once. When they are well-constructed, they are very useful in light soils. If it is not required to go deep, and two horses can draw a double plough, there is a great saving of horses; but if it requires four horses, nothing is gained. The double ploughs are therefore not much in use. But there are instruments which cultivate the earth, stirring and pulverising it much more speedily than the plough. Some of these will stir the ground to the depth of seven and eight inches, giving to the rich ploughing of a field of five or six feet at once. Such an instrument is preferable to the plough, after the ground has already had a certain degree of stirring, and is become mellow and crumbling; but to break up pasture or clover-ley, there is nothing so efficacious as the plough, which cuts regular slices and lays them over, so that all the grass shall rot, and the roots, being exposed to the air, shall decay, and thus give place to the new crop.

The instruments which have been invented to save the time and labour required by repeated ploughings are very numerous. Some of the most useful have been noticed before. [Arable Land.] This idea has been improved upon by constructing a subsoil-plough of great strength,
which will go very deep into the ground and stir the
subsoil a foot or more below the bottom of the usual
furrow. Mr. Smith of Deansmore has invented one made
entirely of iron, and Sir E. Stracey has constructed another
with a small wheel in front very strongly put together,
although the beam is of wood. It is of somewhat lighter
draught than Mr. Smith's, but it does not go quite so deep.
This plough requires four horses in the most favourable
soils, and six in tenacious clays, to keep up with the com-
mon plough, which always should precede it. Sometimes
however the subsoil-plough may be used alone, where the
surface is already mellow and crumbling. The figure of
each of these ploughs, which is subjoined, requires little
explanation when the purpose for which they are used is
understood.

Fig. 21.
Stracey's Subsoil Plough.

Many different ploughs have been invented for the pur-
pose of saving labour in draining land. As they all cut out
a slice from the bottom of a furrow and raise it up to the
surface of the ground, they are of little use in crumbling
soils, and in the most tenacious require the assistance of
much manual labour to complete the work. They act on
the principle of the carpenter's tool by which a groove is
formed in the edge of planks or deals, when they are in-
tended to be joined closely as in a floor. This instrument
is also called a plough; but the uniform tenacity of the
wood allows a narrow chisel to cut an even regular groove.
In the draining-plough the two sides of the drain are to be
cut obliquely downwards and the bottom scooped out evenly.
The plough requires to be often adjusted, and the deep fur-
rrows to be kept cleared from loose earth by means of spades
and scoops. In this way drains may be made from 15 to 18
inches deep, in which loose stones or tiles may be laid to
form a channel for the water. The expense is much less
than when the drains are made with the spade.

When grass-land lies low and wet on a very tenacious
subsoil, a plough is sometimes used which consists of a
cylinder of iron pointed at one end, and connected with a
strong beam by a thick plate of iron, which is sharp on the
side nearest the point of the cylinder, and acts as a couler.
This instrument is forcibly drawn horizontally through the
stiff subsoil at a depth of 12 to 18 inches, so as to leave a
round channel like a pipe where the cylinder has passed.
This has been called a mole-plough, the passage made by

Fig. 22.

it under ground resembling the workings of a mole. It
takes six horses to draw this plough, when the cylinder is
15 inches under the surface, but it is the most easy and ex-
peditious means of temporarily draining land. It can only
be done when the soil is moist and gives way without crack-
ing, but at that time the feet of the horses greatly damage
the surface. In consequence of this a windlass with a long
chain has been invented. The drum, which is vertical, and
round which the chain is coiled, is turned by a horse who
walks round and round, while the whole apparatus is kept
in its place by means of an anchor fixed in the ground. It
draws the mole-plough the length of the chain, and is then
moved forward on small wheels while the chain uncoils.
As soon as the chain is all off the drum, the anchor is refixed
and the operation continues. This mode of draining land has
now been almost entirely superseded by a more regular and
permanent system of draining with stones or tiles. The
channels made by the mole-plough are very apt to fill up in
dry weather; and the mole takes advantage of a ready-
made passage to work in it, stopping it purposely to retain
water and to form its nest. When this is the case, the water
springs to the surface and does much harm. Nothing but
a fresh application of the mole-plough parallel to the old
channels can remedy this evil.

Various ploughs have been constructed with the intention
of diminishing the draught, or improving the form of the
turn-furrow; but most of them, without much regard to
scientific principles, merely from a vague notion founded
on some real or supposed defect in the ploughs in common use,
or in order to adapt them to particular soils and situation.
It would be useless to take notice of many of them, which
have but little merit, and are not generally approved of.
At the meeting of the Royal Agricultural Society at Cam-
bridge in 1849, Messrs. Ransom, of Ipswich, exhibited no
less than eighty-two differently constructed ploughs, giving
an excellent opportunity to those who wished to compare the
principles on which they are constructed, and the manner in
which these principles are applied.

PLough-Monday, the Monday next after Twelfth
Day, fixed upon by our forefathers as the period when the
labours of the plough and other rustic toils begin. In
Derbyshire, and in some of the northern counties, the young
men formerly used to yoke themselves and draw a plough
about with music on this day; one or two persons, dis-
guised in antic dresses, like jockey-puddings, accompanying
them, and going from door to door, soliciting plough-money
to provide drink. In some places it was a custom, if the
ploughman, after that day's work, came with his whip to
the kitchen hatch, and cried 'Cock in the pot,' before the maid
could cry 'Cock on the dunghill,' he gained a cock for
Shrove-Tuesday. Tusser, in his 'Five Hundred Points of
Husbandry,' mentions Plough-Monday among the plough-
man's feast-days.

(Brand's Popular Antiq., 4to, 1813, vol. i., pp. 396, 397;
Brady's Classical Calendar, 8vo., 1815, vol. i., pp. 151, 152;
Lady's Dictionary, by N. B., 8vo., Lond., 1694, p. 277.)

PLOVERS, CHARADRIIDAE, a family of birds
placed by Mr. Vigors in the order Grallatones, or Waders.
The genus Charadrius, including the true Plovers, the Dot-
terdle, the Sea-Lark, the Sandling, the Stone Curlew (Eedic-
Vigors's opinion is that we are introduced to this family by means of *Himantopus*, Linn., a species which has a similarity to the lobated *Fulica* of the preceding family *Rallidae* by the rudiments of the membrane that extends along the toe. This character, he observes, is sufficiently discernible in the species so frequent on our coasts [*Saxa Pia*]; but it is so far conspicuous in an Australasian species as almost to give its foot the appearance of being perfectly lobated. This genus, he remarks, by its habits of swimming, preserves an affinity with the natatorial groups of the *Rallidae*; and the shallow Plovers, in that it possesses the same forms, in Mr. Vigors's arrangement, the extreme genus of the *Scolopacidae*, the whole of the *Wading Birds* that possess the faculty of swimming are brought together into one conception. A sample of the species of this genus, Mr. Vigors consists of *Arenaria*, Briss., our common Sanderling; to which he feels inclined to add *Strepsis*, Ill., and *Vanellus*, Briss., which have been separated from *Tringa* and generally assigned a place near *Arenaria*. Mr. Vigors observes that sometimes these genera possess a hind toe; but that member, he adds, is at the same time so small and feeble as scarcely to form more than a rudiment; and in the structure of their bill, and more particularly in the character of their habits, they evince a more natural union with the *Charadriadae* than with *Tringa*, where a strict adherence to the structure of the foot would place them. The genus *Curvirostris*, Lath., also appears to Mr. Vigors to come from among those species which are joined by the true *Charadrius* of authors. Among the numerous species of this latter genus he notices some that are distinguished from the rest by the greater elevation of the tarsi. These, in his opinion, lead us to the genus *Himantopus*, Briss., which, he thinks, is distinguished only by the apparent absence of the third digit or length of limb. The family is terminated, according to the theory of Mr. Vigors, by the *Eichenesmus* of Cuvier [*Gomphus*], which, by its affinities with the earlier groups of the class, *Rallidae*, is deserving of being placed with that (*Gruidae*) which commenced the order *Grallatores*. He reminds the reader that the family of *Struthionidae* among the *Roeoidea* is closely allied to the *Gruidae* and equally so to the *Charadriusidae*, in consequence of the absence of the hinder toe. With the latter, indeed, he observes, it is frequently united into one group, from their similarity in this character, and the cursorial habits resulting from it, which are common to both. These three naturally allied families therefore are thus, in Mr. Vigors's opinion, brought into contact, and their mutual affinity preserved; while at the same time they retain in the system the various stations into which the different members of their monophyletic group tend to separate them. (*Natural Affinities which connect the Orders and Families of Birds, in Linn. Trans., vol. xiv.*)


The *Charadriidae, or Plovers*, are considered by Mr. Swainson to form the subfamilial type of the order *Grallatores*, and they seem to him to be connected to the *Ardeidae* through the *Charadriidae*. (*Eichenesmus*, or probably by the genus *Cardia*,—a form, by the way, which Mr. Swainson admits that he has never minutely examined. He observes that in this comprehensive group the feet are long and slender, formed for great speed, the toes short, and the hinder one generally webbed, the wings long, and the powers of flight consequently great. *Herons and Rails*, says he, "seek the most secluded recesses of marshy shades. Plovers and Sandpipers, on the contrary, live only on sandy and unsheltered shores, or on exposed commons; they congregate in flocks, and run with great swiftness; their heads are thick, and their eyes large, dark, and placed far back in the head; the bill is short, with the basal half soft, but the outer half becomes abruptly thick, and is often obliquely notched, so as closely to resemble in shape and structure, which appears to represent the great order of Waders. The following genera are the most prominent types:—The Oystercatchers are rather large and strong birds, marked with a dark back and white underparts, and chiefly addicted to being oysters and other shell-fish. One species alone belongs to Europe, the others are natives of South America and Australasia. The *Turnstone* (*Streptilus*) is at once recognised by a short stout bill, rather turned upwards: the name is derived from the habit it possesses of turning up stones; we know but three species. At the end, or rather at the commencement of this group, we may place the thick-kneed *Bushatras* (*Eichenesmus*); since they are obviously allied to the *Charadriidae, or Plovers*, on one side, and to the *Ardeidae* by means of the aberrant Cranes on the other. All the species have been hitherto confined to the Old World; but another, described in this volume, has recently been discovered in the interior of Tropical America. These, it seems, have a strong affinity to the typical Plovers, have many points of resemblance to the Cranes; so that we can agree with Mr. Vigors in considering *Eichenesmus* to have an affinity with the earlier groups of the *Gruidae*, forming part of our *Ardeidae*: and that they thus connect the present family with the ancient.* (*Classification of Birds.*

Mr. Swainson thus characterises the family:—
Bill short; the basal half soft, the remaining portion hard; the culmen suddenly elevated and curved. Nasal groove deep, extending to half the length of the bill. Feet long. The three anterior toes cylindrical; the hinder generally wanting. This family is placed by Mr. Swainson, in the *Turnstone* at the head of the volume, and last of the order *Grallatores*, and embraces the following genera and subgenera:—

*Squatarola, Charadrius, Vanellus, Eichenesmus, Tachypterus, Glareole*.

The Prince of Musignano (*C. L. Bonaparte*) makes the *Charadriidae* the first family of the order *Grallatores*, and he comprises within it the genus *Ostra*, *Eichenesmus*, *Charadrius, Glareola, Arenaria, Scolopaceus (Charadrius*, *Squatarola, Vanellus, Hesperopus (Bonap.), Strepsilus, and Hematopus.* It must be remembered that the *List of Genera*, which gives this arrangement, applies to the Birds of Europe, not to the North American. The first family of the order *Grallatores*, according to Mr. R. Gray's arrangement, is the *Charadriidae*, and they are divided by him into the following subfamilies and genera:—

*Charadriidae.*
parts of the neck white also, but varied with great black and yellow spots; throat, front of the neck, and all the other over parts deep black.

Periodical variation during the moult.—White and black mingled are often seen on the lower parts of the feathers, but always to be seen on the young birds, even after their first spring moult.

In this state the bird is, according to M. Temminck, Charadrius auratus, Gmel.; Le Pliùer doré à Gorge noire, Briss. ; Le Grand Pluvier Pliùre; Le Pliùre doré.

In the fourth part of his 'Manuel,' just published, M. Temminck adds the following synonyms: Charadrius auratus, Naum.; Der Plauferg, Hochsternige, Mittlere, und Hochspreizende, Brehm.; Brockfleugel, Niels.; and Pintore, Savii.

This species is also Le Pluvier Guillermo of Belon (who says that it is named Hunter, 'pour ce qu'on le prend mieux en temps pluvieux qu'en temps sec'; and he gives an amusing account of the mode of taking these birds by the peasants); Der Rechte Brachwegler of the Germans; Haak's Eyes of the Hudson Bay residents; & Custums of the antient Britains.

Habits, Food, Reproductive, &c.—Mr. Selby gives a most correct and interesting account of the habits of the bird in this country:—About the end of May or beginning of June, the females begin to lay, making but little artificial nest, a mere depression in the ground; the nest being generally taken advantage of, and lined with a few dry fibres and stems of grass. The eggs are four in number, rather larger than those of the lapwing; of a cream-yellow inclining to the shell-green, with a thick, irregular confluent coat of deep umbrous brown. The young, when hatched, are covered with a beautiful particoloured down of bright yellow's and black; they quit the nest as soon as hatched, and follow their parents till able to fly and support themselves, which is about a month or five weeks. The old birds display great anxiety in protecting their young brood, using various stratagems to divert the attention of an enemy; among others, that of tumbling on the ground, or flying low, to induce the enemy to look for them, which they most frequently do. It appears indeed to be the instinctive resort of those birds that construct the nest and rear their young on the ground. When aware of an intruder near, the female slowly runs to some distance from her nest, and, before she takes wing, a manoeuvre tending to conceal its true situation; and the discovery of it is rendered still more difficult by the colour and markings of the eggs assimilating so closely to that of the ground, and surrounding vegetation. The usual call-note of the Plover is a plaintive monotonous whistle, by imitating which it may frequently be enticed within a very short distance. In the breeding season a more varied call is used, during which it flies at considerable elevation, and continues soaring round for a considerable time. Towards the end of August these birds begin to leave the moors (having there congregated in large flocks), and descend to the fowls and the newly-sown wheat-fields, where an abundance of their favourite food can be readily obtained. At this season they soon become very fat, and are excellent at the table, their flesh not being inferior in flavour to that of the Woodcock or any of our most esteemed sorts of game. In these last they continue till severe weather approaches, when they either move nearer to the coast or migrate to the southern parts of the kingdom. They fly with strength and swiftness, and if disturbed, when in large flocks, generally seek a form more or less evolutions and circles, and then disperse till they again settle on the ground. The Golden Plover is a nocturnal feeder, and, during the day, is commonly seen squattted upon the ground or standing asleep, with the head close against the body. Its food consists of earth-worms, slugs, insects, and their larvæ, particularly those of the Lepidoptera tribe, many rare species of which I have, upon dissection, found in their stomachs and gullet. In the winter season, if they are for a time fed on oat straw, is difficult to be caught without the aid of a dog.

Utility to Man.—This species has been always considered, and most justly, a delicious bird. It figures in the old bills of fare of the rich and great. Thus in the bills of John Neville, of Chete Knight, of the viands, &c., used at the marriage of his son-in-law Roger Rockley and his daughter Elizabeth Neville, the 14th of January, in the seventeenth year of the reign of our sovereign lord Henry VIII. We find in the second course, 'Hem, plower, 9 of stalks.'
and among the charges, 'Item, in plover, 3 doz., 5s.' In the charge of the said Sir John Nevile, at Lamsass Assizes, twentieth of Henry VIII., we also find 'Item, 6 doz. plovers, 1 12s.' Four hundred plovers were purchased by the 'goodly provision' at the intromission of George Nevell, archbishop of York, in the reign of Edward IV. Drayton, in his 'Polyolbion,' makes Lyndsey boast that her 'fowle' 'more syre are' than those of Holland (Lincolnshire):

"And make fine spirits and blood,
For meere this bates of hole, in not to be more than any earth, the plover grey and greene.'

Geographical Distribution.—Very wide. There is, evidence of the presence of the Golden Plover in each of the four quarters of the globe. Mr. Gould indeed, in his observations on the geographical distribution of the species collected by Mr. Keith Abbot in the neighbourhood of Trebizond, notices the bird as inhabiting Europe, and the adjoining portions of Africa and Asia, but not America. (Zool. Proc., 1834.)

New Temminck expressly says that the species is the same in America and Asia. Sabine also (Parry's First Voyage) makes Wilson's Charadrius apri- caricus and the Golden Plover identical, and states that it breeds in the swampy parts of the North Georgian Islands in considerable abundance. Richardson states that the breeding-quarters of this well-known bird are the barren grounds and the coasts and islands of the Arctic Sea. 'It hatches,' he says, 'early in June, and retires southward in August. Numbers linger on the muddy shores of Holland's Bay, and on the sandy beaches of rivers and lakes in the interior, until the hard frosts of September and October drive them away. At this period they are very fat, and are highly prized by the epicures of the far countries. They make but a short stay in Pennsylvania, and are said to winter beyond the United States.' (Fauna Boreali-Americana.)

Captain James Ross, R.N., notices it as abundant during the breeding season in most parts of the arctic regions, and he found them plentifully in the neighbourhood of Felix Harbour, feeding in the marshes, in company with Charadrius semipalmatus (American Ring Plover). (Sir John Ross's Second Voyage.) Nuttall remarks that the bird is, according to the season of the year, met with in almost every part of the world, particularly in Asia and Europe, from Kamtschatka to China, as well as in the South Sea Islands, and from Arctic America, where it breeds, to the Falkland Islands. The Prince of Musignano (Birds of Europe and North America) appears, on the other hand, to agree with Mr. Gould, for the Prince makes the American analogue of Charadrius Fluvialis, Linn., Charadrius Vir- gimacum, Borkh. (Charadrius Fluvialis, Will.), and Colonie Speck notes it as abundant among the birds of the Doonean, and as identical with Javanese specimens, smaller indeed than one North American specimen and two English specimens in the British Museum, but absolutely identical with other British specimens. He says that it is rare in 'Dukhun,' and appears only in the cold weather. In the stomach he found beetles, land-insects, and coarse sand. (Zool. Proc., 1832.) It appears among the list of birds seen in Japan by Dr. Von Siebold and M. Burger; and Temminck states that those killed there did not differ essentially from those of Europe. Mr. Selby allows a wide geographical range to it, though not to the extent supposed by many naturalists, the birds which have been considered by them as belonging to this species being of a different one, viz. Char. marimo- ratus of Wagler. Instead of extending the range of the Golden Plover to America, New Holland, and other parts of the southern hemisphere, he feels inclined to limit it to Europe, Northern Asia, and some few districts in the North of Africa. (British Ornithology.)

Eudromias, Boie; (Morinellus, Gess.)
Example, Charadrius Morinellus, Linn.; Eudromias Morinellus, Boie; Eudromias Morinella montana et stolida, Brehm, according to Temm.

Description.—(Winter Plumage.)—Top of the head reddish or rusty, varied with longitudinal spots; the rusty colour which frames as it were the feathers of the upper parts less vivid; tail terminated with bright ruddiness.

Summer or nuptial plumage.—Very old Male.—Face and eyebrows very pure white; summit of the head and occiput blackish; nape and sides of the neck ash; feathers of the mantle and wings bordered with very deep ruddiness; on the breast a narrow brown band, succeeded by a large white cinerature; part below the breast and sides very bright ruddiness; middle of the belly deep black; abdomen reddish-white.

Female.—Ruddy colour of the sides often clouded with ash-colour; black spot of the middle of the belly less apparent than in the male or varied with white feathers.

N.B.—During the moult the plumage varies considerably in different individuals. (Temm.)

This is the Pluvier Guignard and Pluvier solitaire of the French; Piàvi de corrione and Piàvi tortolino of the Italians; Der Dumme Regenpfeifer of the Germans; Dot- terell, Dotterell, and Dotterell of the modern British, and Hutten of the antient British.

Habits, Food, Reproduction, &c.—Drayton sings of this bird—

"The Dotterell, which we think a very dainty dish,
Whose taking makes such sport as not no more one wish
For as you creep, or crow, or lye, or stoop, or goe,
So marking you (with ease) the spath bird doth doe,
And acting everything, doth never mark the bet
Till be he in the snare which men for him have set."

Poets have a right to a little licence, and in many of the older prose writers a similar account of the silly mimicry of the bird is given. 'The Dotterell,' says Mr. Selby, 'has always been considered a stupid bird, but for what reason I cannot conceive. I allow that, on its first arrival, it shows but little fear of man, but this, I apprehend, arises more from inexperience of persecution in its native wilds, than from any other cause, and which appears evident from the birds, when harassed and repeatedly fired at, soon becoming too cautious to admit of near approach any longer. Their habits also contribute to render them unwary, for being noo-
tural feeders (like many others of the Charadriidæ), they
are at rest and asleep during the greater part of the day, in
which state also the Golden Plover (a wary bird when
roused) will frequently admit of a close approach. As to
the story of the Dotterel mimicking the actions of the fowler,
by stretching out its leg, wing, or head, when he sets the
example, it, without doubt, arose from the motions that they
do as other birds usually and most naturally make when
roused from a state of repose; and which every one
who attends to the habits of the feathered race must (in
flocks of gulls, plovers, tringas, &c.) have frequently ob-
served. The food consists principally of insects, slugs,
and seeds, and long time it was doubted whether the
Dotterel bred in this country, but these doubts are now
removed, as the reader will find in the next paragraph.
The rude nest is formed of lichens or moss, and the three or
four yellow-gold olive-coloured eggs are sprinkled with
large dots and numerous spots of deep brown-olive.

Geographical Distribution.—Mr. Selby notices the Dot-
terel as particularly abundant in Northern Asia and the
eastern part of Europe, and as inhabiting Siberia and the
vast steppes of Tartary, frequently living in the vicinity of
the salt lakes and marshes of that open region. He adds,
that it is also found, during its winter migration, in Italy
and Spain, and that the great body of these birds retires to
the high latitudes of Northern Asia, Russia, and Lapland and
Alps to breed; but the flocks which pass along the eastern
coast of our island are supposed to limit their flight to the
upland districts and mountains of Sweden and Norway.
Temminck states that it breeds in the north of Russia.
Also in Norway on the great bare plateaux of the moun-
tains, and, in no great number, on the high mountains
of Bohemia and Silsia, at an elevation of from 4500 to 4600
feet. In this country, Sussex, Hampshire, Wiltshire, Berks,-
shire, Cambridgeshire, Lincolnshire, Derbyshire, Yorkshire,
and Northumberland possess it. Dr. Latham states that
in the elevated district of Braemar, Aberdeen, these
birds hatch their young on dry mossy ground near to and
on the very summits of the highest parts, sometimes in the
tuft of little short herbage or moss. The female sits three
weeks, and the young appear about the middle of July. Mr.
Yarrell exhibited eggs of this bird, belonging to Mr. Hevyn-
ham of Carlisle, obtained on Skiddaw in the summer of 1829.
Several pairs were breeding in the same locality. (Zool. Proc.
1836.) Mr. Gould (Birds of Europe) says: 'the eggs of
these birds are so difficult to obtain, that we only know two
collector who possesses them. They are one inch eight
lines long, by one inch two lines and a half in breadth,
light olive-brown blotched and spotted with black: these
specimens were procured from the Grampian Hills.'

Utility to Man.—Excellent for the table when in season.
Numbers are shot near Cambridge and Royston during their
spring migration. We find ' Dotrela' charged at one penny
each, a considerable sum in those days, in the Northern-
land Household-Book, and enumerated among the birds ad-
mitted to the high (his Lordship's) table. They now find
a ready sale in the London market at about six shillings a
couple.

Squatarola. (Cuv.)

Generic Character.—Bill rather strong, cylindrical,
straight, nearly as long as the head; the tip or horny part,
about half the length of the whole bill, tunid, and arched.

Example, Squatarola cinerea (Tringa Squatarola, Linn.),
The Bastard or Grey Plover.

Description.—Adult Male and Female, winter plumage.—
Front, throat, middle of the belly, thigh, abdomen; anato-
tes coverts of the tail pure white; space above the eye, front
of the neck, sides of the breast and sides white varied with
brown and ash-blotches; upper parts blackish-brown, varie-
gated with greenish-yellow spots, but the whole of the feather-
parts terminates with ash-colour and whitish; long internal
feathers of the wings deep black, lower coverts of the tail
marked on their external bars with small diagonal brown
bands; white but reddish towards the end, striped with brown
bands, which are pale and few, and placed on the lateral
feathers; billet black; iris blackish; feet sahby-black. Length
rather more than 10 inches.

Adult Male and Female, in their spring or nuptial plumage.—Space between the eye and the bill, throat, sides
and front of the neck, middle of the breast, belly, and sides
deep black; front, a large band above the eyes, lateral parts
of the neck, side of the breast, thighs, and abdomen pure
white; nape variegated with brown, black, and white; occi-
date, back, scapulars, and coverts of the wings deep black;
all the feathers of these parts terminated by a large space
of pure white; large white spots on the greatest of the wing-
coverts and on the scapulars; oblique black bands on the
lower tail-coverts; feathers of the middle of the tail striped
with white and black.

The Young before the moult resemble more or less
the adult birds and the young in winter; the front, space
above the eye, sides of the neck, and sides are variegated
with larger but paler spots; upper parts of a bright grey
inton varied with whitish; also a little whitish at the extre-
mit of the quills; transverse bands of the tail grey.

In the first of these states of plumage the bird is the
Tringa Squatarola, Gmel.; Le Vanneau Vairé, Buff; and
Grey Sandpiper, Lath. (Syn.)

In the second it is the Vanellus melagonaster, Bechst.;
Tringa Helechotica, Gmel.; Charadrius aquaticus, Will.
Le Vanneau Suisse, Buff; Swiss Sandpiper, Lath.; and
Schwarzbauchiger Kiebitz, Meyer.

The young before the moult are Tringa Squatarola, Linn.
Gmel.; Le Vanneau Pluvier, and Vanneau Chauve, Buff;
Grey Sandpiper, Lath.; and Schwarzbauchiger Kiebitz, im
Hirtebbledse, Meyer.

M. Temminck, who gives these synonyms, remarks, in his
'Manuel,' that at the two epochs of the moult, individuals
are found which have the deep black of the older one
sprinkled with some white feathers, or, when the white
predominates, it is variegated with some black feathers.
The birds in winter plumage and the young may, he observes,
be easily distinguished from those of the Golden Plover,
first, by the presence of the posterior toe; and, secondly, by

Dottrrel in nuptial plumage.

That pretty little Plover, The Ring Dottrrel, comes under
the genus Hiaticula, Maxtr.

Squatarola. (Cuv.)

Generic Character.—Bill rather strong, cylindrical,
the long black feathers which are found inside of the wings near the body; the rest of the plumage differs so little at these epochs, that one might be easily mistaken.

This species is the Charadrius hypolomatid of Wagler, and the Grey Squatarelo of Shaw. It appears to be the Pluvier Grits of Belon, and the Grau Plovers d'Europe, &c., is the following key to obtain under the figure of the bird:

"De miitie secet, de leur on compagna, Ve a Pluvier soyant son appelotier, Par la mot-aes, une c'est bleu de la lueur, Qu'on guet soit par un Roy gouverneur."

M. Temminck, who, in the fourth part of his 'Manuel' (1840), protests against the generic separation of this form, without a passing but sweeping censure on 'toutes les autres coupes nouvelles,' adds to the synonyms Squatarola varia et Helvetica, Brehm; Kleizek Reginufer, Naun; Piteressa, Savi; and Sprachting Piya, Nils.

Habits, Reproduction, &c.—In Britain, where it is not numerous, and principally known as a migratory species, it is found on the coast in "oozy bays, or at the mouths of rivers," where it feeds upon worms, marine crustaceans, &c.

The bird runs well, and its whistle is like that of the Golden Plover, but not so shrill. If killed in good season it is delicious for the table. The nest is of the most rude construction. A shallow depression in the earth is lined with a few pieces of dried bents or straw, and there four eggs generally, which are oil-green blotched with black, are deposited. According to Wilson and Nuttall, this Plover has often in the temperate parts of the United States two broods in a season, though it has only one in Massachusetts, where their nests are of rare occurrence. During the summer both young and old feed much upon various kinds of berries, particularly those of the early bramble, called dew-berries, and their flesh is then highly esteemed. About the last week in August they repair with their young to the borders of the sea-coast, where they assemble in great numbers, feeding on small shell-fish, shrimps, and other small marine animals. Grasshoppers and other insects that abound in the fields are also eaten by them. "They are," says Nuttall, "extremely shy and watchful, uttering a loud rather plaintive whistling note as they fly high and circling in the air, and are so often noisy, particularly in the breeding season, as to have acquired among many of the gunners along the coast the name of the Black-Bellied Killdeer. They usually linger round the sea-coast in the Middle States till the commencement of November, when the frosts beginning insensibly to diminish their prospect of subsistence, they instinctively move off towards the south, proceeding probably at this time under the shade of twilight, as moving flocks are nowhere, as far as I can learn, seen by day. About the middle of September, in the marshes of Chelsea (Mass.) contiguous to the beach, they sometimes assemble at daybreak in flocks of more than a thousand individuals together, and soon after disperse themselves in companies on the shores, to feed upon the small shell-fish and marine insects (crustaceae). This crowding instinct takes place a short time previous to their general migration southward."

(Manual of the Ornithology of the United States and Canada.)

Geographical Distribution.—All the temperate countries of Europe. More abundant in France than in Germany; rare in Switzerland; common enough in the islands and on the coasts of Holland. Abundant in summer in the regions of the Arctic Circle and of Oriental climates, where it breeds. M. Cantraine killed a young one in the Strait of Boniface. (Temm.) Dr. von Siebold and M. Bürger saw it in Japan, and M. Temminck states that he has seen individuals from that locality in both summer and winter plumage. Dr. Richardson, who notices it as the Tooles-creoco, or Tooleztia-aiai of the Esquimaux, says that it is observed in the fur countries in similar places to those frequented by the Golden Plover, though it is not equally common, and that it breeds in open grounds from Pennsylvania to the northern extremity of the continent. He describes a specimen, killed at Hudson's Bay, lat. 57°, in August, 1822. Captain James Ross, in the Appendix to Sir John Ross's Last Voyage, observes that it was more rarely met with than the Golden Plover, but was found breeding near the margin of the marshes immediately to the south-west of Fury Post, in considerable numbers. Some specimens were also obtained near Felix Harbour. It is met with in Egypt and upon the confines of Asia, in Siberia, &c. (Selby.) The last-quoted author states that in Northumberland there are

a few stations on the coast of Britain, where it is found during the whole winter, but only in families or small flocks. It generally arrives about the middle of September, sometimes even earlier, he adds, at which time several of the old birds still retain a part of their summer plumage. In the month of May they go northward. Mr. Gould says that they appear in the greatest abundance in this country while performing their periodical migrations in the months of April and May along the coasts of Lincolnshire, Norfolk, Suffolk, Essex, and Kent. (Birds of Europe.)

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Vannellus. (Bris.)

Generic Character.—Bill shorter than the head, straight, slightly compressed, the points of both mandibles horny and hard. Nasal grooves wide, and reaching as far as the horny tip. Nostrils basal, linear, pierced in the membrane of the nasal groove. Legs slender, with the lower part of the tibia naked. Feet four-toed; three before and one behind, united at the base by a membrane; hind toe very short, articulated upon the tarsus. Tarsi reticulated. Wings ample, tuberculated, or spurred. The first three quill-feathers set off by narrowly or suddenly narrowed towards their tips, and shorter than the fourth and fifth, which are the longest. (Gould.)

Example, Vanellus cristatus; Tringa Vannellus, Linn.

Description.—Male in winter plumage.—Occipital feathers very long, loose barbed, and curved upwards. Top of the head, crest, front of the neck and breast glossy black; upper parts deep green with brilliant reflections; sides of the neck, belly, abdomen, and base of the tail pure white; tail feathers terminated by a large black space, with the exception of the external feather; lower coverts ruddy, bill blackish; feet red-brown. Length rather more than twelve inches. The female has the black of the throat and breast less deep.

The young before the moult have the occipital crest shorter; some blackish colour below the eyes; the throat

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charged at one penny each, and they are among the birds admitted to his lordship's own 'mees.'

Geographical Distribution.—Spread over the whole of Europe, and particularly plentiful in Holland. Mr. Gould states that he has seen specimens in collections from India and Africa. It is noted by Meeza, Dixon, and Ross as occurring in great numbers near Erzeroom, arriving at the end of March, and departing at the end of November. During the summer it frequents the river (Karab-soo, or northern branch of the Euphrates), but on its arrival, and previous to its departure, it is found in moist fields. The native name is Kiz-Cooshbo (Maiden's Bird), or Kahmaam Cooshbo (Bath-bird). *Vanellus Keptachus*, and *Charadrius Mortenellus* and *minor* were found by those gentlemen at the same locality. (Zool. Proc., 1839.) It appears in the 'List of Birds' seen in Japan, by Dr. von Siertold and M. Bürger; and Temminck states that individuals from that locality differ in nothing from those of Europe.

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Varieties. — Pure white. Yellowish white with faint indications of the deeper colours. One or other part of the body speckled with white feathers. (Temm.)

This species is *Le Vanneau* of the French; *Poucetulla communis* of the Italians; *Gebabute Kebs* of the Germans; *De Kievi* of the Netherlands; *Pevezneep, Peetvi, Bastard Plover, Lapwing, and Pope* of the modern British; *Cornetpigeon* of the antient British. It is also the *Wipa, Knoppa*, and *Bleeks* of the Swedes; *Tibbe and Kievi* of the Danes; and, according to Belon, *Aix* (Aix) of the Greeks (Aristot., Hist. An., viii. 3), *Pauzonzo* and *Parruchello* of the Italians; and in some provinces *Diazhit* and *Popechito* of the French.

Habits, Food, Reproduction, Utility to Man, &c. — The habits of this species very much resemble those of the other Plovers, and the arts by which the parents try to lead either dog or man from their eggs or young by counterfeiting the gait of a wounded bird, &c., are as well if not better known as the stratagems of its congener on the like occasions. This is the bird which furnishes the Plover's eggs of the London market; and those who rob the nest are, it is said, careful not to take all, but they leave one or two, so as to induce the bird to go on laying, which she generally does to make up her number. The full compliment, when the bird is not robbed, is generally four, and they are olive-coloured, spotted and blotched with black. That part of the egg which is usually called the white (the albumen) is transparent when boiled, and has somewhat of a bluish tinge. The nest, if nest it may be called, is the bare earth. It haunts the borders of rivers, lakes, plains, and marshy places, and is generally to be found near the sea-shore in the winter. This part of its habits well agrees with those described as proper to Aristotle's *Aix*, according to the reading given by Belon* (loc. cit.). This elegant bird seems to have been as much esteemed by the French for the table as by our own countrymen. In the 'Portraits des Oiseaux,' the following quatrain appears under the figure of the bird:

> Voy cy dessus le portrait du Vanneau,\(^a\) Et le voyant, pousse ta main, patrie:
> Ma faire un repas d'un bon morceau repas.
> Il y a des meilleurs oyseaux d'eau.

In the 'Northumberland Household-Book,' 'Wypes' are

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\(^a\) Quere lames.

\(^b\) But according to other readings it is the alouette, or sea-eagle, to which these habits are ascribed.
islands of the Archipelago. In Greece, he adds, a great number is found; and Professor Nordmann killed one in Russia.

Himantopus. (Briss.)

Generic Character—Bill long, slender, cylindrically flattened at its base and compressed at the point; both mandibles channelled to the extent of half their length from the base. Nostrils lateral, linear. Tarsi very long and slender. Toes three before, the external and middle toe united by a membrane; nails small and flat. Wings very long. The first quill-feather the longest. (Gould.)

Example, Himantopus melanopterus; Himantopus rufipes, Bechst.; Charadrius Himantopus, Linn.

Description.—Face, neck, and all the lower parts pure white, assuming a rosy tint on the breast and belly; occiput and nape black or blackish, with white spots; back and wings black, glossed with green; tail ash-colour; bill black, iridescent; feet vermilion. Length from the point of the bill to the extremity of the tail about fourteen inches, and to the claws about nineteen inches.

The very old male has the nape, and even, sometimes, the occiput, quite white. The female is less than the male; the black of the mantle and wings has no greenish reflexions; and her general tint is browner.

The feet of the young are orange; their mantle and wings brown, with white edges; feathers of the upper part of the head, occiput, and nape blackish-ash with white borders. (Himantopus Mexicanus, Briss.) (Temm.)

This is L'Echasse and Echasse d'manteau nor of the French; Cendrillon Grande Italiano and Cavalier d'Italia of the Italians; Schreersflagtige Strandleutre of the Germans; the Stilt Plover, Long-legged Plover, and Long-shanks of the modern British; Cettyn higros of the antique British.

It is the Hyperbatones Himantopus of Naumann, and Himantopus longipes of Brebin.

Habits, Reproduction, Geographical Distribution, &c.—In tracing the history of this curious form, we must first notice Belon, who, in the 'Portraits d'Oiseaux,' superscribes a by no means bad figure with the following synonyms:—

* Grec. *μαστός;* Italian, Merlo aquatolo grande; François, Lon pourroit dire, le grand chevalier d'Italie.' Beneath the cut he informs us that the *Himantopus,* like the *Himantus,* has only three toes, but that one is a river and the other a sea bird, and that the former is often seen in all the countries along the river which passes by Castel Durante in the duchy of Urbino. It is there called, he says, Merlo aquatolo grande, in contradistinction to another bird which is simply called *Merlo aquatolo* (our Water-ouzel, Cinclus?).

There is no bird, says Belon, in continuation, which has such long legs with reference to the size of its body; for, having the body of a pigeon, its red legs are a cubit long.

After a brief description, he gives the following apothecies:—

'Lon en a mange à la table de monseigneur le cardinal de Tournon, lors qu'il faisait séjour en la duché d'Urbino.'

White, in a letter to Pennant, notices the advent of six of these birds to the neighbourhood of his favourite Selborne in his usual charming style.

In the last week of last month (April, 1779), five of these most rare birds, too uncommon to have obtained an English name, but known to naturalists by the terms of *Himantopus,* *Loripes,* and *Charadrius Himantopus,* were shot upon the verge of Frensham-pool, a large lake, near Farnham, in the county of Winchester, and lying between Wolmer Forest and the town of Farnham in the county of Surrey. The pond-keeper says there were three brace in the flock; but that after he had shot one, another curiously rose up into the air, and the sixth was seen; but remained unmolested. One of these specimens I procured, and found the length of the legs to be so extraordinary, that, at first sight, one might have supposed the stanks had been fastened on to the long legs of the beholder; for they were legs in caricature; and had we seen such proportions on a Chinese or Japan screen, we should have made large allowance for the fancy of the draughtsman. These birds are of the plover family, and might with propriety be called still plovers. Brisson, under that idea, gives them the appropriate name of L'échasse. My specimen, when drawn and stuffed with pepper, weighed only four ounces and a quarter, though the naked part of the thigh measured three inches and a half. Hence we may safely assert that these birds exhibit, weight for inches, incomparably the greatest length of legs of any known bird. The flamingo, for instance, is one of the most long-legged birds, and yet it bears no manner of proportion to the Long-legged plover. The cock flamingo weighs at an average about four pounds avoirdupois; and his legs and thighs measure usually about twenty inches. But four pounds are fifteen times and a half the proportion more than the ounces and a quarter, and four ounces and a quarter have eight inches of legs, four pounds must have one hundred and twenty inches and a fraction of legs, viz. somewhat more than ten feet, such a monstrous proportion as we never see in nature. If you should look at the experiment in the still larger birds, the disparity will still increase. It must be matter of great curiosity to see the Stilt Plover move; to observe how it can wield such a length of lever with such feeble muscles as the thighs seem to be furnished with. It is the best of all that has been called a bad walker; but what adds to the wonder is, that it has no back toe. Now without that steady prop to support its steps, it must be liable to speculation to perpetual vacillations, and seldom able to preserve the true centre of gravity.

The old name of *Himantopus* is taken from Pliny; and, by an awkward metaphor, implies that the legs are as slender and pliant as if cut out of a thong of leather. Neither Willis, nor Ray, in all their curious researches, either at home or abroad, ever saw this bird. Mr. Pennant never met with it in all Great Britain, but observed it often in the cabinets of the curious at Paris. Hasselquist says that it migrates to Egypt in the autumn; and Dr. d'Aubuisson assures me that he has found it on the banks of the streams in Andalusia. Our writers record it to have been found only twice in Great Britain. From all these relations it plainly appears that these long-legged plovers are birds of South Europe, and rarely visit our island; and when they do, are wanderers and stragglers, and impelled to make so distant and northern an excursion from motives and accidents for which we are not able to account. One thing may fairly be deduced, that these birds come over to us from the Continent, since nobody can suppose that a species not noticed once in an age, and of such a remarkable make, can constantly breed unobserved in this kingdom.'

The passage in Pliny from which the name *Himantopus* is taken must be, we presume, that in the eighth chapter of the fifth book on the *Ethiopes:* 'Himantopodes liripede quidam, quibus serpens angrius nascitur.'

Pennant says, 'These birds are extremely rare in these islands. Sir Robert Siddall records a brace that were shot in Scotland; another was shot a few years ago at Stanton Harcourt Common near Oxford; and we have seen them often in the cabinets of the curious at Paris, taken on the French coasts.'

Mr. Selby observes that the members of this genus, remarkable for the disproportionate length and the slenderness of their legs, are not numerous, but not very rare, occupying a wide geographical range, some one of the species being found in every quarter of the globe. By the earlier authors, when only one species was recognised, it was, he remarks, placed among the typical *Pluvia.* Its affinity to the Plo-
vers is shown, he adds, in the form of its feet, and the pas-
sage to Charadrius Chalcodrus is effected through the
interposition of some of the longer-legged species, and by
the members of the genus Flauanias. It also connects,
he thinks, the Plowers with certain groups of the Scolopacidae,
as it shows an evident affinity, both in form and manners,
to the Ayseets (Recurvirotridae), and which, if Wilson
were to lead to the North American species, from the great
similarity observed by him in their respective habits. Mr.
Selby states that the species before us inhabits the shores of
the Caspian sea, all of interior Europe and fresh-water lakes,
feeding upon worms, insects, larvae, &c., which are
found in the muddy shallows of the waters they frequent.
Mr. Selby further remarks that their moult is presumed
by Temminck, for this species does not appear to be
established by actual observation. (Illustrations of British
Ornithology.)

Mr. Gould (Birds of Europe) states that the genus His-
tantopus, although widely distributed, contains, he believes,
only two well authenticated species, namely, Him. mela-
gaster and the North American species. 'This bird,' says
Mr. Gould, in continuation, 'so singular in its appearance
from the extraordinary length and slenderness of its legs,
has been often killed in England; but it must be classed
among those birds whose visits are accidental and uncer-
tain. It is equally scarce in Holland and the northern
portion of Europe; in fact, though apparently abundant
nowhere, it is as rare as it is deficient. The point of number in any given locality is counterbalanced
by its almost universal distribution. We have been
presented with skins, which we consider to belong to this same
species, from Java, India, the islands of the Indian Archip-
elago, and, if we mistake not, from North and South
America. The Long-legged Plower, as its conformation
would lead us to conclude, is a bird whose most congenial
habitat is the marshes and the low flats of lakes, rivers,
and seas. Hence in the eastern portions of Europe, where
it is said to arrive from Asia in small flocks, it takes up its
abode along the lakes and among the vast morasses
of Hungary and Russia, where, according to M. Temminck, it
rears its progeny, and where it fearlessly wades in search of
its food, without much chance of being carried out of its
depth; but should such an occurrence happen, or the
waves drift it out from the shore, it possesses, like many
of the true Wading Birds, the power of swimming with
the greatest ease and lightness: in fact, in whatever point
of view we consider the Long-legged Plower, we find it adapted
in the best possible manner for its habits and modes of life.
Few birds exceed it in the powers of flight; its wings
exceed the tail, and it passes through the air with astonishing
rapidity. When on firm ground, it appears as if tooter-
ing on long and awkward stilts, but still ground is not its
congenial habitat. The egg, as figured by Dr. Thiemann,
measures one inch in length by one inch three
lines in breadth, of a pale bluish-green, spotted and specked
with dark brown.'

The species is recorded in the catalogue of birds collected
on the Ganges between Calcutta and Benares, and in the
Vindhy hills between the latter place and Gurrah Mun-
dela on the Nerburgh, by Major James Franklin, F.R.S.
(Zool. Proc., 1830-31). Lieutenant-Colonel Sykes notes it in
his 'Dukhun' list with the following observations:—
'There are slight discrepancies in the plumage between the
birds of Java, India, and Europe; and in case of these being
permanent and not the result of nonce, specific differences
might be noticed. Iris, mandible, or crissum dark
colour. Length, inclusive of tail, 16 inches; tail 34 inches;
to the end of the toes, 22 inches. Gregarious. Vegetable
matters, larvae of water insects, and minute univalve shells
found in the bottom of the stream. Those birds are strangely polluted with visceral worms of the tape and capillary kinds.' (Zool.
Proc., 1832.) Mr. Thompson, in his 'Catalogue of Irish
Birds,' records that, in the winter of 1825, a bird of this spe-
cies was seen by Mr. Ball in the neighbourhood of Youghal.
(Zool. Proc., 1834.) In 1839, Dr. Dickson and Mr. Ross saw it in the
Er泽rean at the end of July. It was not very common, and
haunted the borders of the river. There was a naked rim
round the eye-lid, of a bright vermilion colour. (Zool.
Proc., 1839.) It has also been noticed by Mr. Keith
Abbott. (Zool. Proc.) Colonel Sykes, in his observations
on Captain Spiller's collection of birds formed at the Cape
of Good Hope, notices Himantopus melanopterus as uni-
versal. M. Temminck states that individuals killed in
Egypt do not differ from the European specimens; neither
do those brought from Brazil by the Prince de Wiedts.
The only difference is, that the Egyptian and Brazilian birds are
larger. American specimens, also received by M. Tem-
mink, differed in nothing from those in Europe, and he
adds that it is asserted that the species is the same through-
out India, but he has had no means of verifying this.
The Long-legged Plower figured by Wilson (pl. 58, f. 2) be
considered distinct and new. In the last part of his 'Manu-
al' (1840) he states that the Japanese specimens exhibit
nothing different, and that the bird makes its nest upon a little
eminence constructed in the marshes, laying four eggs;
the size and form of those of the Avoset, a tarnished
green colour, marked with numerous sable spots, and
dotted with moderate-sized and very small reddish-brown
spots.

Mr. Gould considers that the species found in Australia
and the islands of Java and Sumatra, though hitherto
confounded with Him. melanogaster, is different, and he names it Himantopus lhocephalus. (Zool. Proc., 1837.)

The Prince of Musignano, who places the form among the
Recurvirostridae, makes Himantopus nigricolis (Re-
curvirostra himantopus, Will.) and Himantopus Merccoeeus.
Briggs, from the north and central and southern parts of
America respectively, distinct from Him. melanogaster.

Mr. Swainson informs us that, in his opinion, the species
from Western Africa, although confounded by most natural-
ists with Him. melanogaster, is certainly different, being
characterised by greater size, greater length of wing, and
a peculiar grey colour on the head and neck, which is not
found in either European or American species.
"unalterable pequist." He died in 1584, and was buried in the Temple Church, where a monument to his memory still remains. Camden says of him (Annual Reg. Edin., 1684), "ut in jure Angliæ scientiæ, de quæ scripta bonæ meritû, faciœ primus, vîna integrâtæ inter hominum sum professionis, nulli secundus." His devotion to legal studies was so great, that there is a professional tradition that 'in three years, he was buried once out of the Temple." (Wood's Athenœ, vol. i., p. 504, note.)

The high reputation of Plowden in the legal profession rests entirely upon the character of his Reports or Commentaries. This work consists of a collection of the Reports of important cases, executed with great fidelity and care, and extending from the reign of Edward VI. to the middle of the reign of Elizabeth. The first complete edition of Plowden's 'Commentaries' is in black-letter and Norman French, fol., 1684; the second edition, likewise in folio, is translated into English, fol., 1761. There is also an octavo reprint of the 'Commentaries,' London, 2 vols., 1815. (Wood's Athenœ Oxonienses; Burke's History of the Commoners of England, vol. iii., p. 241.)

PLUM. The Prunus domestica is generally considered as the species which has given rise to the numerous varieties of this fruit; but both Prunus insititia and P. spinosa have most probably contributed. These species are indigenous to a great portion of the northern hemisphere, Britain included. Their range may be stated to extend from Norway to Barbary, and from Portugal to Cashmore, and even Nepal. Damascus was formerly celebrated for this fruit: branches of the plum are represented on Damascus medals; and many of the varieties now in cultivation still retain the name of this place, or it is employed as a distinguishing prefix to a number of subvarieties; thus the French emusmerals upwards of twenty varieties of Damas. In this country the name of Damascena was given to those varieties which may be supposed to have been brought from Damascus, or to others similar; but the corruption of this to Damson has been long established. Whatever region may be the origin of them, it is certainly to France that we are indebted more immediately for the greater part of the varieties now actually cultivated.

In the 'Catalogue of Fruits,' published by the Horticultural Society, 274 varieties are named. It is not however to be presumed that all these will prove distinct, but upwards of 300 at least may be reckoned as such. A selection of the best of these may prove useful; and as some means of ascertaining whether they are correctly named by the nurseriesmen who sell them, the following simple mode of arrangement will be found useful —

Class I.

* FRUIT PURPLE.

a. Round.

Shoots smooth. § 1. Shoots downy. § 2.

b. Oblong.


Class II.

** FRUIT PALE.

a. Round.


b. Oblong.

Shoots smooth. § 7. Shoots downy. § 8.

Varieties of plums most deserving of cultivation, arranged according to the preceding classification, are the following:— § 1.

Reine Claude Violette, or purple gage.

Nectarine plum.

Kirke's.

Virgin.

Queen-mother.

§ 2.

Royale Hâve.

Orleans.

Early Orleans.

Coe's Fine Late Red.

Wine-sour.

§ 3.

Blue Imperatrice.

Ickworth Imperatrice.

Cooper's Large Red.

§ 4.

Blue Perdrigon.

Shropshire Damson.

§ 5.

Green Gage.

Knight's Large Green Drying.

Lucombe's Nonsuch.

§ 6.

Drap d'Or.

Melba.

Washington.

§ 7.

Coe's Golden Drop.

St. Catherine.

White Magnum Bonum.

§ 8.

Gumaraen.

White Perdrigon.

The cultivation of the plum is not difficult. The tree is harder than the cherry-tree, but not so hard as producing the Bigarreau and Heart-cherries; but the blossoms are equally tender. The winter at Riga does not kill the plum-trees, but the cherry-trees just mentioned and many varieties of the pear and apple trees are killed there. The severe frost of January, 1838, contrary to expectation, did not injure the fruiting of the plums in the following summer. The trees succeed in any free soil, not too dry, but by no means stiff or clayey. Their roots extend horizontally, and are apt to throw up suckers, which must be destroyed on their first appearance, otherwise they rob the tree, and form protuberances on the roots. Too much manure will actually kill the trees; and at all times a medium state of vigour should be aimed at. Excessive luxuriance is the forerunner of gummy exudations; and, on the other hand, if the tree be stunted and the vessels contracted by drought or other causes, whereby the sap is obstructed, gum is in that case also induced. Pruning should be applied to the plum in the same manner as to the peach; and in the management of standards care should be taken to destroy useless limbs on their first appearance, instead of waiting till the shoots to be removed become large branches. The varieties are propagated both by budding and grafting; and for the latter, as the buds push early, the cuttings should be taken off not later than February.

PLUMATELLÀ, a fresh-water genus of Polypjriœa marinæ.

PLUMBA/GIN, a vegetable principle existing in the root of the Plumbago Europœa. This substance is of a lemon-yellow colour, and crystallizes in prisms or fine needles of considerable brilliancy. It has a sweetish taste, but leaves an acrid hot impression in the mouth. It melts in a gentle heat, and assumes a crystalline appearance on cooling. When more strongly heated, a small portion sublimes, and the greater part is decomposed, no ammonia being evolved.

Though very slightly soluble in water, the solution has a yellow colour; when dissolved in boiling water, yellow crystals are deposited on its cooling. It is more soluble in alcohol and ether and dilute acids than in water; in the alkalies it is also very soluble, and the solutions are red. The yellow colour is restored by the addition of an acid. When added to a solution of di-acetate of lead, a crimson-red precipitate is gradually formed. Plumbagin does not appear to have been analyzed.

PLUMBAGINÆÆ are a small natural order of monoeptaleat exogenes, with a compound superior one-celled one-seeded ovary, the ovule in which is supported upon a long curved funicle or cord. They are usually plants with a showy flower, herbaceous or under shrubby, with several styles or stigmata, and a powerful acid or astringent quality. The principal genus of the order is the Statice, whose many species, under the name of Sea Lavenders, inhabit the salt-marshes or cliffs of all the temperate parts of Europe. The prevailing colour of the flowers is blue; the instances of yellow, or any other colour, being more rare. Garden Thrift, Armeria maritima, a plant frequently used for an ornamental bordering in flower-gardens, is said to possess powerful diuretic qualities in its petals.
primary or transition rocks. At Borrowdale it occurs in nests in a greenstone rock, which constitutes a bed in clay-slate. In Inverness-shire it occurs in gneiss; at Arendal in Norway, in quartz rock; and in the United States, in felspar and mica-slate, but always in primary rocks.

PLUMBLINE. When a heavy body suspended by a flexible string is at rest, the line passing through the point of suspension and the centre of gravity of the weight is in the direction in which gravity acts. The horizon is a plane perpendicular to this line, and the zenith is that point of the heavens marked out by the continuation of the line upwards. If the string be perfectly flexible, it will coincide with the theoretical line above described.

The application of the plumbline to the arts does not require any explanation here. We shall briefly mention the manner of applying the plumbline to astronomical instruments, and it is necessary to mention it, as in most cases it has been superseded by the spirit level, or observation by reflexion, and so is not described in the account of the instruments.

In the earlier astronomical instruments, where the telescope or line of sight was moveable and the limb of the instrument fixed, two fine dots were made on some part of the instrument, as distant from each other as possible, and parallel to that radius, which was required to be vertical; the fine line was hung in front of the dots, and made to bisect the upper dot by a slow screw motion carrying the wire. The lower dot was then brought under the plumbline by the adjustments of the instrument, and when both were at the same time accurately bisected, the rectification of the instrument in this respect was complete. The weight below was completely immersed in water to diminish its oscillations, and the exact bisection of the dots by the wire was inspected by microscopes. The plumbline was brought so close to the dots as was consistent with perfect freedom, and at the same distance from each as nearly as could be judged. It was also protected by a covering from the influence of the wind.

In instruments of this construction, the bisection of the dots by the plumbline should be noted at the same time as the object is observed by the telescope. As the plumbline in its ordinary position was sometimes in the way of the telescope, the two dots were frequently immersed, which, being verified by the principal dots, could be used for the same purpose of verification; and it is evident, that while the framework of the instrument continues unchanged, the verticality of the line passing over the supplementary dots will ensure the verticality of the line passing over the primary dots, since the two lines are parallel. A simple plumbline, as above described, was universally used up to the latter end of the last century for rectifying instruments employed in ascertaining altitudes, or zenith distances, in which the telescope and its vernier moved on a fixed limb. When the telescope and limb were united, the plumbline was made to pass over the centre of the divisions, and marked out the division on which the horizontal object was brought to the altitude, the fractional part, if any, being measured by the screw which moved the whole instrument until the next division was bisected. Instruments of the latter kind were not, we conceive, much known in this country, but we believe they were used in France.

About 1785 (for we can find no exact date) Ramsden introduced a great improvement in the application of the plumbline. The images of the dots on the instrument were formed on the plumbline by interposing lenses, and the bisection of the image by the plumbline was viewed through microscopes. The plumbline was thus kept out of the way of the observer, and the optical parallax destroyed. This apparatus was, we believe, called Ramsden’s Ghost. But the ghost is liable to this objection when applied to a circle in which the telescope and limb are fixed and revolve together, and the angles read off by microscopes, viz. that the dots are never visible upon the plumbline at the time of observation, but only before or after, at the moments of adjustment, so that a derangement may take place unnoticed. For circles which do not turn in azimuth, this objection seems incurable (not that it is of much importance, as, from the superior stability of their framing and mounting, it is liable to an scarcely be liable to any sudden error), but the present mode of observing by reflexion does away with the use of the plumbline altogether in instruments of this construction. In circles revolving freely in azimuth, the above modification of Ramsden’s principle was introduced by Troughton, is much to be preferred to it.

It was at one time supposed that plumbago was a carburet of iron, but, in the opinion of Berzelius, the experiments of Kursten have proved that it is a peculiar form of carbon, and that the substances which it contains are in a state of mixture merely and not of chemical combination.

According to Dr. Thomson, plumbago is found usually in
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On considering the mode in which the zenith distance of an object is measured by a circle revolving freely in azimuth, it will be seen that the combining these observations in reversed positions of the circle, by the application of the principle that the tube is attached from that point in which the axis of rotation when continued cuts the heavens. If the axis is truly vertical, this point is the zenith, and the purpose of Troughton's plumbline is to bisect the tube and cross it at right angles to another and to the principal tube. In each of these smaller tubes is the following apparatus—at one end a mother-of-pearl disc with a dot, then a leaden bar which forms an image of the dot on the plumbline, and at the other end a tube through which the tube is passed.

The dot is a little eccentric, and the tube has sufficient play to admit of the adjustment being effected very nicely. Now when both the dots have been properly bisected by the plumbline, turn the instrument half round, and look at them again. It is clear that if the axis of rotation were vertical, it would be parallel to the plumbline in both positions, and the dots would be still bisected. If not, by looking at the dots we have brought half way to bisect, and then fully bisected by the adjustments. When this is done, the axis is truly vertical. The operation must of course be repeated and continued until the tube are bisected by the plumbline in every position of the instrument, for there are no means of measuring its deflections (these might be given), it is a longer time in coming to rest, is more liable to cause and to receive injury, and unless the instrument be reversed after every observation, it is as likely to vary from temperature as the level. We should therefore, if we wish to disassociate any one from applying the plumbline to any instrument except the zenith sector, as it may in all other cases be either advantageously replaced by a level or superseded by observations from mercurial. [Circle.] But though Troughton's plumbline is exceedingly beautiful and accurate, we greatly doubt whether it is so effective as a spirit-level. It is much more tryable. Therefore, in the first instance, let us consider of the principle.

(Pearson's Astronomy, vol. ii, p. 285, and most of the circles described in that work; Pond, 'On the Westbury Circle,' Phil. Trans., 1806, p. 420; 'Circle,' Brewster's Cyclopaedia.)

PLUTARChUS was a native of Chaeronea in Boecotia.

The time of his birth is uncertain, and can only be approximately ascertained from the circumstance stated by himself, that his father was a swine - herder under Ammonius at Athens, at the time when Nero was making his first efforts to break Greece, which was in the twelfth year of the emperor's reign, or a.d. 66 (Herod. ii in Dio, c. 1). The family of Plutarch was one of some consideration in Chaeronea, and the fact is not new, that one of its members mentions his great-grandfather Nicarchus, who told him that the citizens of Chaeronea suffered from Antony's soldiers; and he speaks of his grandfather Lampraes as a good-humoured man and an agreeable companion. He has not mentioned his father's name in his own works. He had two brothers, Timon and Lampraes, to whom he was much attached. When a young man, he was sent with another person on a mission to the province of the province. His companions were from some cause left behind, and Plutarch executed the business himself (Herod. ii in Dio, c. 20).

It has sometimes been asserted that Plutarch visited Egypt, but there is no authority for this assertion, and such a conclusion cannot be drawn, as it sometimes has, from such slender premises as are furnished by the fact of his writing an essay on Isis and Osiris. Plutarch visited the island of Delos; and the proofs that he did so are—Theopompos of Chios, perhaps more than once, and he spent some time there, as appears from his own writings (Life of Demosthenes, c. 2); but he did not learn the Latin language in Italy, according to his own account; and the representations of Tacitus and Dio are to the contrary. Plutarch says that he ' had no great number of commissions, and so many people came to him to receive his instruction in philosophy.' It was therefore, he adds, 'not till a late period in life that I began to read the Latin writers. It appears clearly enough from his own writings that he never thoroughly mastered the Latin language, and was very imperfectly acquainted with the antient institutions which formed the groundwork of the Roman policy and the Roman character. It has been conjectured with reasonable probability that his moral writings contain many of the masterpieces that are found in his public lectures in Italy. He wrote his Life of Demosthenes at Chaeronea, after he had visited Rome, but whether he wrote any of his Lives during his long residence in Italy is not known. It may be considered that the work of his old age, and that of all of them were written or finished in his native city.

It is generally said that Plutarch was the preceptor of Antoninus, and was put in his place as consul; but these facts rest on the assertion of Strabo (Hist. lib. 14, c. 14), and on an extant letter addressed to Trajan, which is attributed to Plutarch. It is true that in the dedication of the Apophthegms (Αφοθηγματα Βασιλεως και στρατηγων) to Trajan, Plutarch addresses the Roman emperor, and not either of these circumstances; but then it is argued that the Apophthegms are not by Plutarch, for he says in the dedication, that he had already written the lives of illustrious Greeks and Romans; and if we admit that he wrote the Lives at Chaeronea when he was an old man, and that he did not return there till after Trajan's death, it follows that he did not write the Apophthegms, or at least the dedication prefixed to them. But the letter to Trajan, the dedication to Plutarch, bears the conclusive intendment of both the above facts. This, it only exists in Latin, and in the 'Policriticus' of John of Salisbury; the Greek original has never been produced, and it is not known where John found this letter.

The date of Plutarch's death is not yet distinctly ascertained. At Rome, and his lectures, which of course were delivered in the Greek language, were attended by most of those who affected philosophy. His lectures were given as early as the reign of Domitian, or perhaps even in the reign of Vespasian and Titus, as we learn from a curious anecdote of his own (της τελευταυρατος, c. 13); and he enjoyed the friendship of several distinguished Romans, as Arulenus Rusticus, whose dwelling he visited, Agric., Agr., 2), and Fabius Nepos, the man of consular rank, whose address in the introduction to the Life of Theseus, and elsewhere in his writings.

Among his contemporaries at Rome were Persius and Lucan, the younger Pliny, Martial, Quintillian, and others, but none of them have made any mention of Plutarch, though he must have been known to them. Sossius Senecio, one of his intimate friends, was also a friend of the younger Pliny, who addresses him in his Letters. He retired to Chaeronea in the decline of his life, where he appears to have lived in comfort. He faithfully discharged various magisterial offices in his native town, and he had also the command of a maniple.

Plutarch had a wife, Timoena, to whom he was tenderly attached, and four sons, and a daughter, Timoena. Two of his sons died before him, and he lost his daughter while an infant. It was on the occasion of this child's death that he took the oath to admit of the child's being restored to sense, in which he has perpetuated the virtues and fortitude of a most exemplary wife and mother (Παραδοται φιλη ηις νυμιας).

The time and circumstances of Plutarch's death are unknown, and indeed the events of his life, as will appear from this sketch, are imperfectly ascertained; but the character of the man is as familiar to us from his own writings as if we possessed the most elaborate biography of him.

The great work of Plutarch is his 'Parallel Lives' (Βιοι Παραλλακχοι), which contains the biography of forty-six distinguished Greeks and Romans, besides the Lives of Aratus, Menon, Aratus, Galba, Obo, and Homer, which last is probably not by him. The forty-six Lives are arranged in pairs or sets, each of which contains a Greek and a Roman, and the two lives in each pair are followed by a comparison of the characters of the two persons. These are—Themistocles and Solon and Valerius Publicola, Themistocles and Camillus, Pericles and Fabius Maximus, Alciades and Coriolanus, Timoleon and Emilius Paulus, Pelopidas and Marcellus, and Hierocles and Scipio Africanus, Pyrrhus and Marius, Lysander and Sulla, Cimon and Lucullus, Nicias and Crassus, Eumenes and Sertorius, Agesilaus and Pompeius, Alexander the Great and Julius Caesar, Phocion and Cato Minor, Agis and Demetrius, and two other.

The biographies of P. C. No. 1259.
Epimenides, Scipio, Augustus, Tiberius, Caligula, Claudius, Nero, Vitellius, Hesiod, Pindar, Crates the Cyneic, Daiphantus, Aristomenes, and the poet Aratus, are lost.

Plutarch's son Lamprias made a list of his father's works, De mortibus Philosophorum vivorum, which is partly preserved, and Plutarch mentions it in his De mortibus Philosophorum viuorum, that it was lost.

In the department of biography, Plutarch is the only writer of antiquity who has established a lasting reputation. The plan of his biographies is briefly explained by himself in the introduction to the moribrun, and his knowledge of the brevity with which he is compelled to treat of the numerous events in the lives of Alexander and Caesar. For, he says, I do not write Histories, but Lives; nor do the most conspicuous acts of necessity exist; much less is the life of a virtuous man, in which some slight circumstance, a word or a jest, shows a man's character better than battles with the slaughter of tens of thousands, and the greatest arrays of armies and sieges of cities. Now, as painters produce a likeness by a representation of the countenance and the expression of the eyes, without troubling themselves about the other parts of the body, so I must be allowed to look rather into the signs of a man's character, and thus give a portrait of his life, leaving only the great events and battles. The object then of Plutarch, in his Biographies, was a moral end, and the exhibition of the principal events of a man's life was subordinate to this his main design; and though he may not have adhered to the plan of the treatise in all its details, he cannot be denied that his view of what biography should be, is much more exact than that of most persons who have attempted this style of composition. The life of a man is a far grander, and more interesting, when it is entered, giving a complete history of all the public events in which he was engaged, is not biography, but history. This extract from Plutarch will also in some measure be an apology for the want of historical order observable in many of the Lives. Though it was altogether deficient in that critical sagacity which discerns truth from falsehood, and disentangles the intricacies of confused and conflicting statements, Plutarch has preserved in his Lives a vast number of facts which would otherwise be unknown, to the great advantage of the reader, and must have had access to large libraries. It is said that he quotes two hundred and fifty writers, a great part of whose works are now entirely lost.

There are two purposes for which the Lives of Plutarch may be read. We may read them for the pleasure of the perusal, which arises from a conviction of the integrity of the writer, and his graphic representations, his benevolent disposition, and the moral end which he always keeps before him. We may also read them for the purpose of a critical investigation into the facts which he has recorded, and for the purpose of supplying from him the defects of other ancient authorities. With this latter object we must institute a comparison of his to the other ancient accounts, which vary greatly in value; and above all must be careful in reading his Lives of the Romans not to be misled by any notions that he had formed of the institutions of a people with whose language he was imperfectly acquainted, and to whose antient history he was nearly a stranger. On the sources of Plutarch's Lives the reader may consult an essay by A. H. L. Heeren, De Pontibus et Autoritate FUtium Paralllarem Flutucom Commentationes IV., Goettingen, 1829, 8vo.

Besides the Lives, a considerable number of Plutarch's essays may be styled historical. They may all be read with pleasure and some of them with instruction, not so much for the sake of the matter as for the manner, which is scattered so profusely through Plutarch's writings, and for the picture which they exhibit of the author's own mind. In one of these essays, entitled 'On the Malignity of Herodotus', he expresses his opinion, attacked the veracity and integrity of the father of history, and with the same success that subsequent writers, more ignorant and less honest, have given better attacks on the life and works of the historian, the closest criticism may enhance but can never depreciate. (Journal of Education, vol. ii., p. 129.) The 'Lives of the Ten Orators,' which are attributed to Plutarch, are of little value, and may not be his; still they bear internal evidence, as to their authorship, of having been of later age than that of Plutarch.

The Lives of Plutarch first appeared in a Latin version by several hands, at Rome, in 2 vols. fol., about 1478. This Latin version formed the basis of various Spanish and Italian translations. The first Greek edition was printed by Philip Giunta, Florence, 1517, fol. Among more recent editions are those of Bryan, London, 1729, 5 vols. 4to., in Greek and Latin, which was completed by Moses du Plat, Paris, 1752; and that of Kaltwasser, Berlin, 1816, 6 vols. 8vo.; and that by Schaefer, Leipzig, 1826, 6 vols. 8vo. The translations are very numerous. The best German translation is said to be by Kaliwasser, Magdeburg, 1739-1766, 10 vols. 8vo. Another German translation appeared at Vienna, in 1812. The best Italian translation is by Pompei. The French translation of Amyot, which appeared in 1595, has considerable merit, and has been often reprinted, and the English translation of Sir Thomas Temple, London, 1612, which is aways made from that of Amyot, is often very happy in point of expression, and is deservedly much esteemed. The Lives were also translated into French by Docez, Paris, 8 vols. 4to., 1721. The translation sometimes called Dryden's, the first volume of which was published in 1683, was executed by a great number of persons. According to a note by Malone (Dryden's Prose Works, ii., p. 331), there were forty-one of them. Dryden himself translated nothing, but he wrote the dedication to the duke of Ormond, and the Life of Plutarch, which is prefixed to the translation. The last English translation is by John and William Langhorne, an insipid and tasteless version, which has the merit of being tolerably correct in the style, and it is the only translation of the sort which has any notes of value, and is prefixed by a very critical and ill-written Life of Plutarch. There is an edition of this version by archdeacon Wrangham, with corrections and additions which add little to the value of the Langhorne's labours.

The other writings of Plutarch, which consist of about sixty essays, are generally comprehended under the title of his 'Moralia, or Ethical Works,' many of them being entirely of an ethical character. The minor historical pieces already referred to, of which that on the malignity of Herodotus is one, are usually comprised in the collection entitled 'Moralia.' Plutarch was fond of the writings of Plato; he was strongly opposed to the sect of the Epicureans, and he gives many good precepts for the bringing up of children. His philosophy was practical, and in many of its applications, as for instance his Letter of Consolation to Apollonius, and his Marriage Precepts, he is as felicitous in expression as he is sound in his precepts. Notwithstanding all the deductions that the most fastidious critic may make from Plutarch's moral writings, it cannot be denied that there is something in them which always pleases, and the more the better we become acquainted with them; and this is no small merit in a writer.

Plutarch's style bears no resemblance to the simplicity of the Attic writers. It has not the air of being much elaborated, and it is incessantly studded with curious or charming allusions. He is usually always animated and pleasing, and the epistle pictorial may be justly applied to him. Sometimes his sentences are long and ill constructed, and the order of the words appears not the best; but his prose has a melting pastoral air, and he occasionally uses and perhaps affects poetic words, but they are such as give energy to his thoughts and expression to his language. Altogether he is read with pleasure in the original by those who are familiar with him, but he is something that has been added to a strange mixture in the age in which he lived, treating of such subjects as biography and morals, not to have fallen into a merely rhetorical style, to have balanced antitheses, and to have contended
himself with the inanity of commonplaces. Whatever he says is manly and invigorating in thought, and clear and forcible in expression. A work should be said of those digressions in which his Lives abound. ‘I have always been pleased,’ says Dryden, ‘to see him and his imitator Montaigne, when they strike a little out of the common road, of the imitat’s respecting his subject, or his manner of treating it.

If we mark him more narrowly, we may observe that the great reason of his frequent starts is the variety of his learning; he knew so much of nature, was so vastly familiar with the history of the world, that he was unequal to himself, and was forced, as I may say, to lay down some at every passage, and to scatter his riches as he went: like another Alexander or Adrian, he built a city or planted a colony in every part of his progress, and left behind him something imperial of his greatness.’

(The Life of Plutarch, by Dryden.)

The first Greek edition of the ‘Moralia,’ which is exceedingly incorrect, was printed by the elder Aldus, with the following title, ‘Plutarchi Opuscula, [lxxxii],[1], Gr., Venetia, 1509, fol.’ It was afterwards printed at Basel, by Froben, 1542, fol. and 1542, fol. The only good edition of the ‘Moralia’ is that printed at Oxford, and edited by D. Wyttenbach, who laboured on it twenty-four years. This edition consists of six volumes of text (1795-1809), and two volumes of notes (1810-1821), 4to. There is a print of it which is generally bound in 5 vols. 8vo., with two volumes of notes. The remarks of Wyttenbach were printed at Leiden, 1806, 8vo.

The first edition of all the works of Plutarch is by H. Stephens, Geneva, 1572, 13 vols. 8vo., which is said to be correctly printed. This edition was reprinted several times. A complete edition, Greek and Latin, appeared at Leipzig, 1774-1792, 12 vols. 8vo., with the name of J. J. Reiske, but Reiske did very little to it, for he died in 1774. An edition by J. C. Hutten, appeared at Tübingen, 1791-1805, 14 vols. 8vo. A good critical edition of all the works of Plutarch is still wanted.

The ‘Moralia’ have been translated into French by Amyot. Amyot’s complete translation of all the works was reprinted at Paris by Didot, 1818-1820, 23 vols. 8vo. The ‘Moralia’ have been translated into German by Kallwasser.

Pluto (Μόραστα), more frequently called by the Greeks Hades (Ἄδης), and by the Romans Orcus and Dis, was the brother of Zeus and Poseidon, and the deity that presided over the region where the departed souls of men were placed. Hades, which is also written without an aspirate, Ades, is a word of uncertain etymology. Pluto is supposed to be connected with the Greek word poulion (πούλιον), signifying a metal, of which are found beneath the earth’s surface, below which the abode of Hades was generally placed. The Latin Dis has the same meaning. Orcus is probably connected with the words ὁκρώ and ὀρχώ, and means restrained.

Pluto is represented by the ancient writers as a gloomy deity, inexpressible to the prayers of mortals, and hated by the human race above all the gods. (H., ix. 159.) His wife was Persephone, called by the Romans Proserpina. (Pausanias.)

In the ‘Iliad’ (ix. 569; xx. 61; xxi. 100) and in the ‘Theogony’ of Hesiod (455, 767), the abode of Hades is said, as has been already stated, to be beneath the earth; but in the ‘Odyssey’ it is placed in the regions of darkness beyond the stream of ocean. (Od., x. 508; xii. 81.)

In later writers the word Hades also signifies the abode of the dead, as well as the deity that presided over it. The temples and statues of Pluto appear to have been very few. Pausanias relates (i. 28, § 6), that there was a statue of Pluto in the temple of the Eumenides on the Areopagus of Athens; and the same writer also informs us (x. 20, § 1) that there was a statue of this god in the temple at Olympia, but he mentions no temple sacred to Pluto in any part of Greece.

Plutonic. Rocks of igneous origin and ancient geology are often described in many modern works. In publications relating to the controversy between Wernersians and Huttonians, the former are often styled Neptunists, the latter Plutonists. In Bromsgrove’s ‘Tableau des Terrains,’ the ‘rocks and minerals’ of the first are connected with the theory that the latter are specially rocks of fusion, but placed with them in one class of Typhonian rocks. Granite, syenite, porphyry, eutite, and pitchstone are Plutonic rocks.

The term is not synonymous with the word Hypogone, as defined by Mr. Lyell.

Plutus (Πλοῦτος), the god of wealth, is said by Hesiod (Theog., 969) to have been the son of Demeter and the hero Janus. He appears as an actor in the comedy of Aristophanes named after him; but we have no particulars as to his history. In the Historia Animalium of Theophrastus, Plutus was represented as a child in the arms of Fortune (Paus., ix. 16, § 1), and at Theophras in Boetia there was a statue of Plutus placed by the side of one of Athena Ergane (Paus., ix. 26, § 5.)

Pluvialis, Pluvier, Pluvialis.

Pluto Colophus, [Plittacidei.]

Plutophani, [Plittacidei.]

Pluton, Portland, Portland, Portland, Portland.

Plymouth, a seaport, corporate, and market town in Devonshire, 12 miles from the town of Plymouth, and the county town of Devon, and 216 miles from the General Post-Office, London, by the South-western Railway to Basingstoke, and from thence by mail-road through Whitchurch, Andover, Amesbury, Winchester, Eton, Exeter, and Ashburton, in 50° 17' N. lat. and 4° 58' W. long. It is the easternmost of the three towns which lie on the north shore of the Sound. The others are Stonehouse and Devonport. (Devonport; Stonehouse.)

Plymouth was originally inhabited by fishermen. By the Saxons it was called Tame worcester; after the Conquest it was called Sutton (i.e. South-town), which name is retained by an inlet of the Sound, Sutton Pool, on the shore of which the town was at first built. In the 13th century the northern part of the town, built on the land of the priory of Plympton, was distinguished as Sutton-Prior, and the southern part, built on the estate of the Vallotors, as Sutton-Calstock. In 1613 it was chartered as a borough. The later residences of the town and other immunities of the priors of Plympton were granted to the mayor and corporation. In the reign of Elizabeth a new charter was bestowed on the corporation on the solicitation of Sir Francis Drake, who further benefited Plymouth by bringing water to the town from Dartmoor by a winding channel twenty-four miles in length. In a.d. 1579 and 1581 the town suffered much from the plague. In 1585 the Spanish Armada, which was rendezvous of the fleet destined to oppose the Armada; and in 1596 of the fleet destined to attack Cadiz. In 1626 the plague again broke out, and carried off two thousand persons. In the civil war of Charles I. the town, which was afterwards held by the parliamentary party, was besieged by the royalists under Prince Maurice, but held out until relieved by the earl of Essex (a.d. 1643).

It was soon after attacked by the king in his march into Cornwall, and subsequently blockaded by Sir Richard Grenville, but both attempts failed of success.

The town of Plymouth is on the north side of Plymouth Sound, between the two great arms of that harbour, Catwater on the east, and Hamoaze on the west, but at some distance from both. The small inlet of Sutton Pool is close to the town on the east side, and Mill Bay, another inlet, not far from it on the west. Point on the entrance to Sutton Pool is the citadel, and to the north of this lies the town of Plympton, consisting of a group of streets of which the older are irregularly laid out, while those of modern date are on a more regular plan. The limits of the borough comprise the two parishes of St. Andrew and St. Charles the Martyr, which are jointly administered by thirty-one, 31,060: part of each parish, lying beyond the corporation boundary, is not included in this statement. The older streets are narrow and ill built, and some of them steep. Up to the present time the present street plan has not been done in the way of local improvement, but since that period great improvements have been made. Building has been extensively carried on; many handsome houses have been built in the suburbs, and new and handsome road formations have been made with stone, and several additional towers made to the public buildings. The town is well lighted with gas; the supply of water is under the direction of the corporation, and is still furnished by Sir F. Drake’s channel.
or 'lest,' it is receiving three large reservoirs, one of them belonging to government, and distributed by iron pipes. There were formerly many public conduits, but having become nuisances, they have been gradually removed; the last six in 1826. The surplus water turns several mills belonging to the corporation.

But this is a spacious structure of ancient foundation and varied architecture, having a square embattled tower. In 1825 its interior was repaired and embellished at an expense of upwards of 4,000l., but the original appearance is preserved. A spacious organ, will seat 2,500 persons, and is lighted with gas. Charles church was begun just before the civil war of Charles I., but was not completed until after the Restoration, when the exuberant loyalty of the period led to the dedication to Charles the Martyr. It is a neat building, with a square tower and well proportioned spire. There are two chapels-of-ease, one in each parish, besides three other episcopal places of worship, viz. a mariners' church, a chapel in the citadel, and a licensed room on the Hoe. There are besides chapels for Baptists (two), Independents, Presbyterians, Unitarians, Quakers, Wesleyan, and Brynante Methodists, and other dissenters, and a few religious synagogues.

The foundation-stone of a new church built in St. Andrew's parish, to be called Trinity church, was laid a few months since. There is a splendid hotel, with an assembly-room, and a theatre adjacent to it, both erected by the corporation at a very considerable expense. The new custom-house, the royal baths, the new hospital, the Athenæum, or building of the Plymouth Institution, the public library, the Freemasons' Hall, and the Mechanics' Institute, are also worthy of mention. The Custom-house is a splendid building, corresponding with the central watchhouse and the town prison. The grammar-school is a substantial stone building.

The harbour of Plymouth comprehends the Sound and its various branches. The fourth mile of the sound stands the Eddys lighthouse, built in 1759, on a reef of rocks stretching north and south 100 fathoms, and forming a slope to the west-south-west. The Sound is a considerable inlet of the English Channel, three miles wide at the entrance from Plymouth to the opposite side of the Sound, the Hamoaze, is the headland on the east, and extending inland about three miles to the citadel and town of Plymouth. On the western side of the Sound is Cawsand Bay. The coast all round, except just at the village of Cawsand on the west, and at the inlets of Mill Bay and Sutton Pool on the north, is rocky and abrupt, and the rocky island of St. Nicholas (sometimes called Drake's Island) rises out of the water not far from the north shore. The mouth of the Sound and the entire form of the headland for the three miles of war, and is called Hamoaze; it opens into the north-western corner of the Sound. The mastery of the Plym or Lara forms another harbour, chiefly used for merchant vessels and for trade among the West India islands &c., and is called Catwater; it is capable of containing 1,000 sail of such vessels. Here is also a wet and dry dock suited to the building of 74-gun ships. Catwater opens into the N.E. corner of the Sound and has at its mouth the rocky monitory of Mount Batten, opposite Plymouth. It is not so deep as Hamoaze. Sutton Pool is a tide-harbour, also used by merchant vessels; and an act of parliament has just been obtained for the erection of a pier in Mill Bay, for the accommodation of one of the largest classes of steamships at all times of the tide (1840). This pier has been determined on in consequence of the great number of steamers which now frequent the port. The harbour of Hamoaze is four miles long, and the water of fifteen fathoms at its head; there are moorings for nearly one hundred sail of the line. The dock-yard (Devonport) is on Hamoaze. The harbour was long exposed to the heavy sea which rolled into the Sound and the mouth of the Sound, and great damage was at various times done. To remedy this a breakwater or dyke, formed of loose stones, was commenced A.D. 1812; it runs across the middle of the Sound, having a total length of nearly 1 mile, viz. between four and five miles in the compass, which runs in a direction nearly from east to west, with a continuation of 350 yards at each end, turning more to the north, and forming a considerable angle with the direction of the Sound. The gales from the north and west water as a precaution to the harbour has been proved in several severe gales which have occurred since its commencement. The harbour is defended from hostile attack by the citadel of Plymouth, by the fortifications on the island of St. Nicholas, and by various other batteries.

The population of Plymouth, as well as of the adjacent towns of Stonehouse and Devonport, has increased a good deal much during the present century, as appears from the following statement:

<table>
<thead>
<tr>
<th>Year</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>1801</td>
<td>16,040</td>
</tr>
<tr>
<td>1811</td>
<td>23,747</td>
</tr>
<tr>
<td>1821</td>
<td>33,578</td>
</tr>
<tr>
<td>1831</td>
<td>43,194</td>
</tr>
</tbody>
</table>

If we take the increase of the ten years 1821-31 as the basis of our calculation, we may estimate the present population of Plymouth at nearly 46,000; that of Devonport (which has not of late increased so fast) at 36,000; and that of Stonehouse at 12,000: making a total of 88,000. The trade of the town is important, as appears by the custom-house returns for the year 1839, which amounted to 50,000/. Besides the business arising from the dockyard at Devonport and the connected establishments, considerable trade is carried on with the West Indies, the Baltic, and the Mediterranean, and coastwise with London and other ports, and there is an active fishery, especially of whiting and hake. The imports are timber and West India produce; the exports, manganese to Scotland, wool to Hull, and lead to London and Bristol. There are an extensive sail-cloth manufactory, a sugar refinery, a glass-house, a very large soap factory, and a starch factory. Granite, slate, limestone, and marble, are quarried in the neighbourhood. The limestone or marble of the Oreston quarries, on the shore of Catwater, opposite to Plymouth, was the material chiefly employed for the breakwater. Near these quarries is a beautiful iron-bridge of five elliptical arches over Catwater, built at the sole expense of the earl of Morley. In 1834 a floating steam-bridge was established across the Hamoaze by the Devonport and Torpoint, which crosses regularly every quarter of an hour, and conveys the mail-coaches, carriages, horses, and passengers without the least delay or inconvenience. This communication has proved the greatest benefit to the neighbourhood. A railroad, to the extent of 34 miles, connects Plymouth from Sutton Pool to Prince Town, near the prison of war at Dartmouth. There are markets on Monday, Thursday, and Saturday.

The town contains about 15,000 residents and 36 councillors; the borough is divided into six wards. Quarter-sessions and petty-sessions (twice a week) are held; and there is a court, entitled the mayor's court, or the borough court, for the trial of civil actions arising in the corporation, arising from tolls at the markets and fairs, from the rents of the mills, the royal hotel, the theatre, and other property belonging to the corporation, and from the water rents, is about 6700l. There is a heavy debt. The borough prison, when the inspectors made their second Report (dated 1836), was inadequate for its purpose and under bad management.

Plymouth returned members to parliament in the reigns of Edward I. and II.; and again in the reign of Henry IV., since which time it has regularly sent two. The mayor is the returning officer. The boundaries of the borough for parliament purposes are those of the existing borough, or Boundary Act. By the Reform Act, Devonport, with which Stonehouse was incorporated, was formed into a new parliamentary borough, returning two members. The number of voters registered for Plymouth in 1832-4 was 1571; in 1835-6, 1776; for Devonport at the same periods, 1870 and 2083.

The living of St. Andrew is a vicarage united with the chapel of Penncross, of the clear yearly value of 920l.; and together with the patronage of the perpetual curacy of the chapel-of-ease, the clear yearly value of which is 145l. The living of Charles is a vicarage, the clear yearly value of which is 612l.; the value of the chapel in this parish is 106l. per annum.

Among the educational institutions of Plymouth were, in

- The dimensions of the breakwater are, with the exception of the breadth, very roughly given. In an account published by John, Devonport (1819-20), it is stated that the breakwater is driven at 310 feet, and that the depth of water at high tide is 30 feet. Mr. Withick gives the dimensions of the breakwater as follows:— breadth at the base 120 yards, at the top 10,
1833, in the parish of St. Andrew, the Orphans' Aid School, an endowed school for the maintenance and education of orphans born in the borough, in which were 8 orphans; the Benevolent Institution for clothing and educating 60 girls; a grammar-school, partly endowed, with 30 boys; a new grammar-school, with 33 boys, instituted originally as a proprietary school; 41 other day or boarding and day schools; an infant-school, since given up, with 57 children, and numerous Sunday-schools for little children. There were also three Sunday-schools. In Charles parish were an endowed school, with 80 boys and 80 girls; Dame Hannah Rogers's Charity, with 55 girls; a Lanesterian school, with 176 boys and 120 girls; a day and boarding school, with 60 girls, called the House of Faith; fifteen Sunday-schools. The whole number of children under instruction in the two parishes was returned at about 3290, besides those in the Sunday-schools.

There are a Mechanics' Institute; the Plymouth Institution for the promotion of arts, science, and literature; the Natural History Society of Devon and Cornwall; a public library containing more than 6000 volumes; baths, and a theatre. Races are annually held in a meadow near the town, and a regatta in the Sound. There are an hospital for merchant seamen, a public dispensary, an eye infirmary, and several other charities. There are prisons for men and women, and a Senate, or Court of Aid.

PLYMOUTH, AMERICA. [Massachusetts.]

PLYMPTON. [Devonshire.]

PNEUMATICI (of πνευματικος), a medical sect founded by Athanasius about the middle or end of the first century A.D. They were a sect of mechanics or philosophers, who were noticed in the life of their founder, and the following is a list of the physicians that belonged to their number:—Archigenes (Galien, Introd., cap. 9, p. 699, ed. Kühn), Herodotus (Galien, De Simplic. Medic. Temper. ac Pneumat., lib. i., cap. 29, p. 432, and De Different. Puls., lib. iv., cap. 11, p. 751), Agathinus (Galien, De Digest. Puls., lib. i., cap. 3, p. 275), Magnus (Galien, De Different. Puls., lib. iii., cap. 29, p. 470; Pneum. Rusc., lib. iii., cap. 1, p. 501; Thes. Vol. I., cap. 11, p. 104). To these the name of Athanasius has been given by Le Clerc (Hist. de la med., p. 508, &c., ed. 1723), Wigan (Prefat. ad Inrit., Barchusen (Hist. Medic., p. 269), Schulze (Compund. Hist. Medic., Halm, 1744, p. 332), and Halier (Bibloth. Medic. Prax., tom. i., p. 192, &c.); but the passages brought forward in support of this opinion (for it rests only on internal evidence) are considered to be insufficient to prove the point by Petit (Prefat. ad Comment. in Arist.), Osterhausen (Disert. Institutiones Pneumac, for Medicoorum Historia, Altoft, 1791, 8vo.), and Ackermann (De Aretaeo, in edit. Kühn). The sect appears to have existed but a short time, namely, from the reign of Vespasian to Adrian. They maintained that the animal respiration was due to a force that was constantly generated in the lungs, and that by means of this force the air was extruded from the lungs. They held that the lung was nothing but a bladder, and that the means of weighing the full bladder in vacuo, or that he could keep it distended when the air was extracted from it.

The invention of a species of forcing-pump for raising water, and for compressing air through orifices in tubes, both of which are ascribed by Vitruvius (lib. ix., x.) to Ctesibius, who lived about 130 years B.C., are proofs that the elastic force of compressed air must have been apprehended and made subservient to practical utility. The ascent of water in pumps, on raising the piston, must have been for ages observed, without a suspicion being entertained of the cause; and the principle that the existence of a vacuum was impossible, was held to afford a sufficient explanation of the phenomenon. Even Galileo, when made aware, by the formation of a vacuum between the piston and the water when the latter was at its greatest height in a pump, that the principle was unfounded, had recourse to another which was equally remote from the truth; for he is said to have ascribed the ascent of the water to the attraction of the piston, and to have accounted for the height of the column never exceeding a certain quantity (about 34 feet) by a supposed equilibrium between the weight of the column and the attraction of the piston. The steps by which Torricelli arrived at the discovery of the true cause of the phenomenon, and, at the same time, the determination of the pressure of the atmosphere by the weight of the column of mercury supported in a tube closed at the upper extremity, are unfortunately unrecorded.

Soon after the commencement of the seventeenth century, the idea of ascertaining with precision the state of bodies with respect to temperature by the expansion of fluids when acted on by heat, led to having the members of the Academy del Cimento at Florence; and this gave rise to the invention of an instrument of great importance, as well for many occasions of ordinary life, as for the purposes of pneumatical science. [THERMOMETER.]

The desire of perfecting the theory for determining the heights of mountains by the barometer, led to numerous researches in order to ascertain the relations between the contraction of the force of compressing it, and also to discover the effects produced by various temperatures. About the year 1660, Boyle in England and Mariotte in France determined from experiments, that when the temperature was constant, the density of air was proportional to its pressure, but it was not until the later part of the century, that individuals who afterwards showed that De Luc determined the expansion consequent upon given increments of temperature.

In the beginning of the eighteenth century, steam began to be employed in a variety of purposes by machinery. The law of the resistance of the air to bodies moving in it was discovered by Sir Isaac Newton; but the intensity of this resistance against military projectiles was first ascertained by Vaucanson in 1740; and Dr. Hutton subsequently obtained a formula which, with perhaps sufficient correctness, may be employed with any velocity whatever. The expansion of fired gunpowder has been determined from the researches of the mathematicians Folliot, and Hutton; and that of steam has been investigated by Dalton in England, and by Prony, Arago, and other members of the Institute, in France.

If a fluid be conceived to be perfectly elastic, it is evident that it can be made to pass through a given volume only by being confined within a close vessel, or by the pressure of a circumambient fluid. In the latter case it is easy to perceive that while the temperature of the elastic fluid remains the same, the pressure of the spaces occupied by it diminishes, as the compressing force is increased, and increased when the latter is diminished; and that the density, or degree of closeness of the particles, will vary directly with the changes of volume.

Now the compression or rarefaction of air, which are the names given to the changes in the surface of an elastic fluid are usually estimated in terms of the pressure exerted by a vertical column of the atmosphere, its base being equal to some unit of superificies, as one square inch or foot. Whatever be the constitution of such column, its weight or pressure is known, in a given state of the atmosphere, by direct experiment, and this is usually designated the pressure of one atmosphere: the same pressure is also frequently expressed by the height of the column of mercury which is required to exert a pressure of one atmosphere in a barometric tube by the counteracting weight of the atmospheric column.

A simple experiment suffices to show the relation between the density and elasticity of a fluid and the compressing force. Let mercury be poured into a bent tube open at one end and closed at the other; the sum of the weights of the column of mercury, and of the atmosphere above it in the open tube, will reduce the air in the closed tube to a volume which it would occupy if the column of air were open at both ends, more mercury being added, and the volume of air will be still further reduced at every addition of mercury; and it will be found that the volumes of air vary inversely as the sums of these weights and atmospheric pressures. Since, however, since the density of an elastic fluid is inversely proportional to the space it occupies, it follows that the densities are directly proportional to the compressing weights; and since the weight of the air is proportional to the weight of the condensed air in the close tube, the elastic power of the condensed air in the close tube, that elastic
force is also directly proportional to the compressing force, that is, to the density. [Air.] This is the law of Boyle and Mariotte, and though it cannot be said to be absolutely correctly expressed as generally employed.

The following table, extracted from the results of the experiments made by MM. Prony, Arago, and others, exhibits the volumes and elasticities of a given quantity of atmospheric air under different pressures, the temperature being nearly constant, and expressed by $1^\circ$ of the centigrade thermometer ($57^\circ$ Fahrenheit), and, as far as it extends, it confirms the law above mentioned. The first of the columns expresses the pressure or elasticity in multiples of the weight of an atmospheric column, the second expres-

<table>
<thead>
<tr>
<th>Temperature</th>
<th>Volume, $\frac{cm^3}{m^3}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td>10000</td>
</tr>
<tr>
<td>20</td>
<td>9700</td>
</tr>
<tr>
<td>22</td>
<td>9400</td>
</tr>
<tr>
<td>24</td>
<td>9100</td>
</tr>
<tr>
<td>26</td>
<td>8800</td>
</tr>
</tbody>
</table>

The law being admitted, it may be proved that the particles of an elastic fluid repel each other with a force which varies inversely as the distance between them. For let the volume of fluid be in the form of a cube, and let the com-

pressing force act perpendicularly on one of its faces; then, if $\frac{d}{D}$ represents the distance between two nearest particles of the fluid, the number of particles in the surface pressed

\[ \frac{1}{d^2} \]

will vary as \( \frac{1}{D}. \) Now assume that the repulsive force (per-

pendicularly to that surface) between every two nearest particles in the volume varies as $d^2$; then the whole repulsive force on that surface, and, consequently, the compressing force, will vary as $d^4$. If $D$ represents the density of the fluid, $v$ will vary as $\frac{1}{D^2}$, or $D^{-4}$; therefore, substituting

$D^{-4}$ for $d$ in the last expression, the whole repulsive force

varies as $D^{-K}=\frac{1}{D^K}$. But, agreeably to the law above men-

tioned, the compressing force varies as $D$; therefore the expen-

tent $-K$ must be equal to unity, and hence $K = 4$. It follows therefore that the repulsive force between two nearest particles varies as $d^{-4}$, or inversely as the distances of those particles from each other. Sir I. Newton however observes (lib. ii., prop. 23, schol.) that this law holds good only when the repulsive power of any particle does not extend more than towards those which are nearest to it.

And, if $P$ and $P'$ represent the pressures exercised upon a square unit of the superficies bounding an elastic fluid, and the volumes of the fluid under those pressures be $V$ and $V'$; or also if the densities be $D$ and $D'$ respectively, we shall have

\[ P = \frac{D}{D'} V' = \frac{P'}{P}V \]

and $P = \frac{D}{D'} V = \frac{P}{P'}V$.

Considerable difficulty is found in determining the spe-
cific gravities of gases with precision, and different experi-

menters have obtained results which do not exactly agree.

The value generally adopted for air, when the height of the column of mercury in the barometer is 30 inches, and the temperature by Fahrenheit’s thermometer is 59°, is 1.22 ounces avoirdupois, or 534 grains troy. The experiments of Mr. Dalton have led to the conclusion that the weight of a cubic foot of steam when at the temperature of boiling water, and the height of the barometrical column is 30 inches, is 253 grains troy; by others it has been found to be 3547 grains; and it appears that within considerable limits the expansion of the volume of a given quantity is proportional to the increments of temperature, measured by the degrees of the thermometer. The absolute value of the expansion is not precisely known; that of air is stated to be equal to about $\frac{1}{273}$, and that of steam about $\frac{1}{919}$, for one degree of Fahrenheit’s thermometer. [Air.]

The following table, from the observations of MM. Du-

long and Petit, exhibits the volumes assumed by a given quantity of air at different temperatures between the boiling point and near the freezing-point of mercury—
or '00218 of its volume for an increment of temperature expressed by one degree (Fahrenheit); and it being admitted from the experiments of Mr. Dalton that a cubic foot of water produces 1711 cubic feet of steam at a temperature equal to 212° (boiling water).—Then, letting \( V \) represent the volume of steam at a temperature expressed by zero, we have \( 1\cdot462 V = 1711 \); hence \( V = 1170\cdot3 \); and, if \( t \) represent the given temperature in degrees of Fahrenheit's thermometer, \((1 + '00218 t)\) \( V \), or \( 1170\cdot3 + '254 t \), will express the volume of the steam at the temperature \( t \), when subject to a constant pressure.

But if the steam is incapable of changing its volume, as when it is contained in a close vessel, the elastic force increases by an increase of temperature in the same proportion as the volume would have increased under a constant pressure; consequently the elastic force at the temperature 212° being represented by 30 inches (the height of the counterbalancing mercurial column), we have

\[
1711 \cdot 1170\cdot3 + '254 t = 20\cdot71 + '0447t
\]

and the last term of the proportion expresses, in inches, the height of the mercurial column equivalent to the elasticity at the temperature \( t \); the volume of the steam being equal to 1711 cubic feet, as at the temperature 212°. Let this elasticity be represented by \( E \); then the volumes of any given quantity of elastic fluid, at equal temperatures, being inversely proportional to the pressures by which they are produced from expanding, we have the following proportion:

\[
\text{As any given compressing force (represented by the height of the mercurial column corresponding to some temperature} t \text{ in the above table), is to the elastic force or pressure (above the earth, and it is probable that the volume of the steam} = 1711; \text{so are} 1711 \text{ cubic feet} (= \text{the volume of steam produced by a cubic foot of water at 212° under a constant pressure equal to the atmosphere), to the volume (in cubic feet) of the steam produced by a cubic foot of water under the given compressing force. Let this be represented by} v.
\]

Now the quantities of matter being the same, the specific gravity, or weight in grains, of such volumes; and the specific gravity, or weight of a cubic foot, of steam being known from experiment to be 254.7 grains, when the cubic foot of water produces 1711 cubic feet of steam, we have

\[
v = 1711 \cdot 1710\cdot3 + '254 t.
\]

and the last term is the specific gravity, or weight in grains, of a cubic foot of steam at a given temperature and under a given pressure.

Mr. Robins found that the volume of air disengaged from gunpowder is equal to about 244 times the volume of the powder itself; and that its expansive force, when increased by the heat which is generated at the time of the explosion, is about 1000 times as great as the pressure of the atmospheric at any state. It is from this circumstance that consecutively exert a pressure against a cannon-ball, and the interior of the barrel of the gun, equal to nearly 15,000 pounds upon every square inch of the surface upon which it acts. Both D. Bernouilli and Euler however make this pressure still greater.

The fact that the density of air varies with the compressing force is sufficient to show that the atmosphere about the earth cannot be of uniform density; and it is also evident that the density must diminish from the surface of the earth upwards, according to some law depending on the height of any point above the earth, or rather upon the weight of the mass of air above that point. It might, at first, be supposed that the atmosphere would extend upwards to a height at which the centrifugal force of the particles of air (by the diurnal revolution) is equal to the force of gravity; and it is shown by Poisson (Tracté de Mécanique, tom. ii., 619) that, conformably to this principle, the height of the atmosphere at the equator should be equal to about five times the semi-diameter of the earth. But it is probable that, long before this height is attained, the air loses its elasticity by the cold in the upper strata, and its expansion is destroyed by the pressure of the external fluid which is diffused through infinite space. By the duration of twilight it is inferred that the atmosphere is capable of reflecting the sun's rays at the height of about 45 miles above the earth, and some light is reflected from a still more elevated region.

In order to determine the law by which the density of the atmosphere diminishes at increasing distances from the earth's surface, on the supposition that the action of gravity and the temperature of the air are constant, let \( T \) be the centre of the earth, and let \( AZ \) be the height of a very slender column of air extending vertically upwards to the top of the atmosphere. Also let the atmosphere be divided into an infinite number of concentric strata of equal thicknesses, which latter represent by AB, BC, CD, &c.; and, as these thicknesses are small, the density of the air in each stratum be uniform and equal to that which is due to the weight of all the strata above it.

Let \( d_1, d_2, d_3, &c. \) represent the densities of the several strata whose heights are AB, BC, CD, &c.; these terms may also represent the weights of the slender columns AB, BC, CD, &c.; consequently the weights of the columns AB, AC, AD, &c. may be respectively represented by \( d_1, d_1 + d_2, d_1 + d_2 + d_3, &c. \) \( d_1 + d_2 + d_3 + &c. \)

In like manner \( d_1 = d_1 + d_2 + d_3 + &c. \) \( d_1 = d_1 + d_2 + d_3 + &c. \)

by composition, \( d_1 + d_2 + d_3 + &c. \) \( d_1 + d_2 + d_3 + &c. \)

And, from (I) and (II), by equality of ratios, we have

\( d_1 : d_2 : d_3 = : d_1 + d_2 + d_3 + &c. \)

Thus \( d_1, d_2, d_3, &c. \) are in a geometrical progression decreasing.

Now AB, AC, AD, &c. form an arithmetical progression increasing; or, reckoning both the heights and the densities from any point, as \( K \), downwards, the former (that is, \( KH, KG, KF, &c. \)) form an arithmetical progression, and the densities in \( KH, HG, GF, &c. \) form a geometrical progression, both increasing. But a series of numbers in an arithmetical progression being made to correspond to a series in geometrical progression, the former numbers are logarithms of the latter; and thus the distances \( KH, KG, \) &c. may be considered as representing the logarithms of the densities in the strata \( KH, HG, GF, &c. \) respectively.

Hence, if there existed a table of logarithms formed on the two series just mentioned, the height of any point, as \( C \), above another, as \( A \), would be equal to the difference between the logarithms of the densities of the air at those points; or by the nature of logarithms, we should have

\( \log AC = \log \frac{d_1 + d_2 + d_3 + &c.}{d_1} \). But such a table is unnecessary, since, from

the series of values of logarithms and of the logarithmic curve, the value of \( AC \) may be found by means of the common tables. Imagine any point \( K \) to be the origin of the abscissae (represented by \( x \)) on the vertical line \( ZA \) and imagine any hour in the day to be represented by \( y \) to be drawn: then, if \( KF, KD, &c. \) be proportional to the logarithms of \( FF, DD, &c. \), the line \( adhk \) &c. is called the logarithmic curve, and its equation is

\( \log y = \log d + ax \).
The mountain-barometer, as it is called, is usually provided with an adjusting screw, by which the surface of the mercury in the cistern may be made to coincide with the zero of the scale of inches by which the height of the column is expressed; but those of a more portable kind have not the advantage of this adjustment. There will be a small error for the scale of the instrument. For this purpose, the ratio between the area of the bore of the tube and the interior area of the cistern must be found (it is usually given by the maker of the instrument); this is the ratio between the rise or fall of the mercury in the cistern and the corresponding fall or rise of that in the tube. When the surface of the mercury in the cistern happens to lie below that of the air, the height of the column as measured by the instrument is increased; the height of the column in the tube is correctly expressed by the difference of these heights, the height of the column in the tube being, in that case, called the neutral point, no correction being then necessary. In other cases add — of the height shown by the scale to that height, if the latter is greater than the neutral height, or subtract it; the sum, or difference, is the correct height of the mercury in the tube above the surface of that in the cistern.

Water boils when the elastic power of the vapours formed from it is equal to the incumbent pressure; and consequently the temperature at which the boiling takes place in the open air will depend upon the weight of the atmosphere; the temperature at which water boils is 212° F., or 100° C. When the weight becomes less than the station is more elevated, it is evident that water will boil at a lower temperature on a mountain than on the plain at its foot; and the Rev. Mr. Wollaston constructed an instrument called a thermometrical barometer, by which, on the principle just mentioned, the difference of heights of stations can be found. A tube containing the mercury is provided with a graduated scale, and, when used, the bulb is placed in a vessel of water, which is made to boil by a spirit-lamp.

In order to determine the height of stations merely by the knowledge of the temperature at which water boils, the formula $F = \left( \frac{l + 75}{85} \right)$ given by Mr. Tredgold, might be employed. Here $t$ is the temperature of the boiling water at the station, expressed in degrees of the centigrade thermometer; $F$ is the measure of the elastic force of the steam at the temperature $t$ under the pressure of the atmosphere, and is expressed by the corresponding height, in centimetres, of the column of mercury in a barometer. This height being thus determined at each of the two stations, as $A$ and $C$, the difference of the logarithms of the heights being multiplied by 10,000 will give the appropriate height $AC$, which may be then corrected as above.

The columns through which air flows from a vacuum through an aperture in a vessel follows the same law as water or any other non-elastic fluid [Hydrodynamics]; for though, in the former case, the quantity of air passing through the orifice is affected by the square of the pressure, in the latter it varies with the square root of the pressure. Therefore it is evident that the velocity by which the air is forced out varying in the same proportion, the pressure, by dynamics, remains constant. Hence we find that a column of air, in its ordinary state, extending to the top of the atmosphere, rushes through an orifice into a vacuum with a velocity (=1339 feet in a second) equal to that with which a heavy body would fall through a height equal to that of a homogeneous atmosphere.

The law is the same, whether we consider the air to act only by its weight, or whether it be confined in a vessel and the efflux be produced by the elasticity. For, the air in the vessel being in the ordinary state of the atmosphere, the pressure against every point of the interior surface is equal to the pressure of the atmosphere by which, if not otherwise confined, it would be kept in its actual state; consequently it begins to flow from the orifice with the velocity, by which it had been impelled by the weight of the whole column of atmosphere by which the orifice is bore, with the velocity due to the descent of a body from a height equal to that of a homogeneous atmosphere. After this moment, the density of the air in the vessel diminishing, its elasticity diminishing with it, and the power of motion diminishes in the same ratio as the density; therefore the velocity remains constant. It may be added also that, since the density of air increases with the pressure, an additional pressure on the fluid in a vessel will not in
crosse the velocity of the efflux. But the law just mentioned only holds good when the vacuum is supposed to remain perfect on the exterior of the orifice; for, if the air be received in a vessel, it will expand in that vessel and re-segregate as the effluent air at the orifice, thus diminishing the velocity till the latter finally becomes equal to zero; and this will take place when the air has attained the same density in the two vessels.

If the effluent air be of a given density, but not the same as in the ordinary state of the atmosphere, the force by which it would be made to flow into a vacuum must be determined by the above equation \( PD' = PD \); where \( P \) is the pressure (or weight of the column) of the ordinary atmosphere, and \( D' \) its density at the effluent air face; \( D \) the given density and \( P' \) is the required pressure or force by which that air would be impelled through the orifice.

Now if air in the ordinary state be allowed to rush into a vessel containing air less dense than itself, and the velocity of efflux be required, the moving force will be the difference between that with which the ordinary air is driven through the orifice and that with which the rarier air would be so driven; that is, it may be represented by \( P - P' \); then the velocities of efflux being as the square roots of the forces \([\text{Hydrodynamics}]\), if the velocity due to the force \( P \) is given, the required velocity at the commencement of the efflux may be found.

The determination of the velocity with which steam or any other elastic fluid rushes into a vacuum, or into a fluid of less density than itself, is made in the same manner for air. Thus, knowing the temperature of steam, and consequently the equivalent pressure, we may find the height of a homogeneous atmosphere which would produce the same pressure; and then the velocity with which the steam flows into a vacuum would be equal to that required to expel the height of such atmosphere. But if the steam is to flow into any elastic fluid of less density than itself, the height of the homogeneous atmosphere must correspond to the difference of the pressures arising from the different elasticities of the two fluids.

In order to find the time during which air, being in the ordinary state, must flow through an orifice into an exhausted vessel before the air in the latter acquires any given density \( D' \), let \( V \) be the interior volume of the vessel which is to receive the air, and \( A \) be the area of the orifice; also let \( t \) be the required time. Then \( d \) \( (V.D') \) or \( V.D' \) represents the small quantity of air which may enter the vessel \( V \) in the time \( dt \) at the commencement of the efflux. Now, let \( D = \) the density of the air in the ordinary state of the air, \( D' \) that of the homogeneous atmosphere, then \( \sqrt{2gD} \) \([\text{Hydrodynamics}]\) will be the initial velocity. But, \( P' \) being the force by which the ordinary air is impelled through the orifice, from the equation \( P.D' = P.D \) we have \( P' = P = \frac{D}{D'} \), and \( P - P' \) becomes the force by which the air is impelled through the orifice at the end of the time \( t \), or when the density is \( D' \), and the velocities being proportional to the square roots of the forces, we have the velocity at the end of the time \( t \) equal to \( \frac{2gh}{D} \); this being multiplied by the density, by the area of the orifice, and by \( dt \), gives \( \frac{2gh(D-D')}{D} \) \( dt \) for the small quantity of air which, during the element \( dt \), flows in time, and at the end of the time \( t \), flows into the vessel. The velocities being constant, the quantities that flow during the time \( dt \) are equal to another; hence, equating this expression with \( VdD' \) above, we get \( dt = \frac{2gh(D-D')}{V} \). This equation being integrated gives \( t = \frac{2ghD}{V} \cdot (D-D') + \text{const.} \). The constant is determined by considering that \( t = 0 \) when \( D' = D \), which gives \( \text{const.} = \frac{V}{D} \), and thus the value of \( t \) is found.

It is shown under the word Air-Pump that the density of the air in a receiver becomes diminished in a geometrical progression by the successive strokes of the pump. Now the common ratio of this progression may be expressed algebraically by the term \( \frac{\nu}{\nu + 1} \), where \( \nu \) is the volume of the receiver, and \( \nu' \) that of the barrel; and, if \( D \) be the density of the air in the receiver when the process of exhaustion is commenced, we shall have evidently \( D = \frac{D}{D'} \), for the density of the air in the receiver after \( n \) strokes.

Hence this denominator is found, if the number of strokes is given; or, reducing the equation, we may find \( n \), the number of strokes which would be necessary in order to reduce the air in the receiver to the given density.

For the pressure and resistance of the air against bodies, see Abar-Dynami and Gunnery; and for aerial navigation, see Ballon.

PNEUMOBANCHIATA. Lamarc'he's second section of his order Gasteropoda, containing the Limacinae, or Smalls. PNEUMO'NIA. [Lungs, Diseases of.] PNEUSTO/DEA, Fitzinger's name for a family of Saurians, formed from Lyricephalus and Pneateus, Merrem, and Pheynodactylus, Kaup. This family Fitzinger approximates to that of the Camelons.

PO, BASIN OF THE. The river Po, called Padus and Eruditas by the Romans, rises from two springs, in about 44° 40' N. lat., 7° E. long, on the eastern side of Mount Viso, a splendid mountain of the Pyrenean class, and about the upper part of which is covered with perpetual snow. The sources of the Po are about 6000 feet above the sea. Flowing first east and then north-east, through a deep valley called Val d'Oro, the Po receives on its left the Chisone and other streams from the valleys of Pignedor and of the Valdenses; and on its right bank the Vaira, the Maira, and the Graina, which, rising in the recesses of the Maritime Alps, enter the Po in a north-easterly direction through the open country of Saluzzo, and join the Po in succession above the town of Cavignano, from whence the river flows nearly due north to Turin, through a broad valley bounded on the west by the offsets of the Cottian Alps on the west and the hills of Monferrato on the east. Passing Turin, where it is crossed by a handsome stone bridge, the Po receives on its left bank the Dora Riparia from the valley of Susa and Mount Cenis, and afterwards the Stura from the valley of Lanzo, a romantic district of the Maritime Alps. North of the Tanaro, the river now inclines to the north-east, receives the Orca from the north, and passing by the town of Chivasso, turns to the east or east by south, in which general direction it continues to flow for the rest of its course to the sea, making lower numerous windings. Below Chiasso the Po receives from the north the Dora Baltea, with all the drainage of the large valley of Aosta, and after thirty miles farther the Sesia, a considerable stream, which rises in the glaciers of Mount Rossa, and after following the valley of the Tanaro, an Alpine valley, enters the plains of Vercelli, receives the Cervo and other streams, and after a course of about ninety miles enters the Po below the town of Casale. The Po here makes a large curve to the south, passes through Turin, and resumes its eastern course. In all its course from Carignano to Valenza, for a length of nearly eighty miles, the Po receives no affluents of any importance on its right bank, being skirted all along on that side by the hills of Monferrato, owing to which the river describes a kind of semicircle. But to the south of those hills, and between them and the Ligurian Apennines, flows the Tanaro, a large stream which rises near Ormea in the Maritime Alps, and flowing northwards, reaches the Eltico, Pesio, and Gezzo, and the Stura from Cuneo (Stura is the name of several rivers of Piedmont), and after passing by Cherasco and Alba turns to the east, receiving the draining of the hills of Lower Valenza, on one side, and the streams of the Apennines on the other. [Monferrato.] The Tanaro flows by Asti, the principal town of Monferrato, receives the Belbo from the south, and farther on the Bormida, swelling by the Orba from the mountains of the Padana, after which it flows through the plains of Alessandria and Magengo, and enters the Po about eight miles below Valenza, after a tortuous course of about 150 miles, in which it describes a nearly parallel to that described by the Po, being separated from the latter river by the hills of Lower Monferrato.

After receiving the Tanaro, the Po continues its course in an easterly direction through the wide plain of Lombardy, two fluidic streams of the Rondi, southern branch of the Serio, the Sesto from Tortona and the Staffora from Voghera, and on its left or northern bank the Agogna and the Teradoppo from Novara. Between Voghera and Piacenza several offsets of the river, P. C. No 1140.

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Ligurian Apennines approach close to the southern bank of the Po, whose only affluent of any importance from that quarter is the Trebbia, a mountain torrent which swells greatly in the rainy season, but is shallow in time of drought. [Parma, Duchy of.] There is a marked difference of character between the Po east of the Tanaro and those which come from the north. The latter are deep perennial rivers, being fed by the glaciers of the Alps, but the others partake more of the nature of torrents, being chiefly supplied by the rains which fall in the Apennines. Napoleon, in his "Military Memoirs," dictated to Montholon, that an army invading Italy from France finds its march much easier by following the southern instead of the northern bank of the Po. It issues out of several small lakes near the summit of the St. Gothard, flows through the Canton Ticino, and enters the Lake Maggiore, out of which it issues again at Sesto, from whence it flows for 126 miles through the great plain, marking the boundary between the Austrian and Sardinian territories. It passes by Pavia and enters the Po a few miles below that city. The Ticino is a very rapid river, but is navigable in the lower part of its course. East of the Ticino, on the border of the duchy of the Duchy of Milan, and lower down the Adda, a deep and rapid stream, which is the outlet of the Lake of Como, and is swelled by the Brembo and the Serio from the mountains of the west. East of the Adda rises the Oglio, a considerable river, which rises in Valcamonica on the borders of the Valtellina, forms the little lake Iseo, and, issuing out of it at Sernico, receives the Melia from Brescia, and the Chiasso. It forms the lake of Iseo, and enters the Po above Bergoforte. The Oglio is navigable by large boats below Pontevico. Its whole course, from its source to its confluence, is about 140 miles. [Brescia, Province of.] Proceeding to the eastward, the next great affluent of the Po is the Mincio, an important river, which is the outlet of the Lake of Garda, and with it forms a geographical division between the Milanese territory, or Lombardy Proper, and the old Venetian territories. The Mincio, and its principal affluent, the lake at Peschiera, forms the large pocket in the middle of which lies Mantova. Below Mantova it is navigable for large boats down to its confluence with the Po near Governolo.

The Po below Piacenza receives on its southern bank the following rivers, or rather torrents, which rise in the Apennines: 1. The Nera, a small stream; 2. the Taro, a larger river which rises in the mountains of Pontremoli, and after a course of about 65 miles enters the Po above Casal Maggiore; 3. the lake at Peschiera and the lake of Lenna, two large lakes of the Apennines; 4. the Ceno, a stream which passes by Guastalla; 5. the Secchia, a considerable river which crosses the duchy of Modena, and enters the Po a few miles below the confluence of the Mincio. The Secchia is navigable for large boats, and its two large mouths in the Apennines near the Brenta and Bacchiglione as forming part of it, as those rivers are connected by canals with the Adige, and the Adige communicates with the Po. In this latter sense the delta of the Po may now be considered as terminating on the south at Primaro: it extends to the northward as far as the mouth of the Adige at Brondolo near Chioggia, distant from Primaro about 40 miles in a direct line from its mouth, and from Padua in the plain of Padua about 20 miles. It has also several rivers, or rather torrents, from the Tuscan Apennines, namely the Savena, Idice, Silara, Santerno, and Senio. The Po di Primaro enters the sea at Primaro a few miles north of Ravenna. The Po of Ravenna rises in the Apennines on the sea by a separate mouth between Primaro and Ravenna. In ancient times the Lamone communicated with the Po, and Ravenna itself stood on an island in the delta of that river. (Bertoldi, Memorie del Po di Primaro, Ferrara, 1878.) The delta of the Po may now be considered as terminating on the south at Primaro: it extends to the northward as far as the mouth of the Adige at Brondolo near Chioggia, distant from Primaro about 40 miles in a direct line from its mouth, and from Padua in the plain of Padua about 20 miles. It has also several rivers, or rather torrents, from the Tuscan Apennines, namely the Savena, Idice, Silara, Santerno, and Senio. The Po di Primaro enters the sea at Primaro a few miles north of Ravenna. The Po of Ravenna rises in the Apennines on the sea by a separate mouth between Primaro and Ravenna. In ancient times the Lamone communicated with the Po, and Ravenna itself stood on an island in the delta of that river. (Bertoldi, Memorie del Po di Primaro, Ferrara, 1878.)

The Po below the Po of Venice receives on its southern bank the following rivers, or rather torrents, which rise in the Apennines: 1. the Nera, a small stream; 2. the Taro, a larger river which rises in the mountains of Pontremoli, and after a course of about 65 miles enters the Po above Casal Maggiore; 3. the lake at Peschiera and the lake of Lenza, two large lakes of the Apennines; 4. the Ceno, a stream which passes by Guastalla; 5. the Secchia, a considerable river which crosses the duchy of Modena, and enters the Po a few miles below the confluence of the Mincio. The Secchia is navigable for large boats, and its two large mouths in the Apennines near the Brenta and Bacchiglione as forming part of it, as those rivers are connected by canals with the Adige, and the Adige communicates with the Po. In this latter sense the delta of the Po may now be considered as terminating on the south at Primaro: it extends to the northward as far as the mouth of the Adige at Brondolo near Chioggia, distant from Primaro about 40 miles in a direct line from its mouth, and from Padua in the plain of Padua about 20 miles. It has also several rivers, or rather torrents, from the Tuscan Apennines, namely the Savena, Idice, Silara, Santerno, and Senio. The Po di Primaro enters the sea at Primaro a few miles north of Ravenna. The Po of Ravenna rises in the Apennines on the sea by a separate mouth between Primaro and Ravenna. In ancient times the Lamone communicated with the Po, and Ravenna itself stood on an island in the delta of that river. (Bertoldi, Memorie del Po di Primaro, Ferrara, 1878.)
Apennines of Tuscany make a bend to the southward, leaving a level space of about 30 miles in width between their base and the bank of the Po. The plain or valley of the Po has a general slope from west to east in the direction of the course of the river. On each side of the valley the ground rises gently from the plain; it is known by the Italian name of Apennino, and of Alps on the other, but the slope is more gradual and gentle on the northern side. The town of Como, at the southern extremity of the lake of that name, and at the entrance of the great plain from the north, is 600 feet above the city: Milan, which is half-way between Como and the Po, is about 400 feet; and Pavia, which is near the banks of the Po, is little more than 300 feet above the sea. The fertility of the soil of the Po basin is proverbial.

The northern end of the Po basin consists of the hilly region and the highlands. This region, which is the most delightful part of the whole, forms a broad belt along the northern border of the great plain, and includes the lakes of Oerta, Maggiore, Lugano, Como, Iseo, and Garda. South of the Po are the hills of Monferrato and the lower outskirts of the Ligurian Apennines. The highlands are formed by the Alps on one side and the Apennines on the other. [APENNE.

POA, the Greek name (φυτόν) for grass of any kind, is applied by botanists in a more limited sense, being restricted to those plants of the Gramineae order which have a pinnate indorsement, many flowered spikelets, hermaphrodite flowers, and no fruits or seeds. It is a point, without being inflated or provided with any kind of armature. Such grasses are abundant in Europe, the most common of all flowering plants being Po annua, the little annual grass so common on the banks of the Po, and Po pratensis, the absence of the gardener, flowering and ripening its seed at all seasons when not actually frozen. It is probable that the perennial species are mostly suited for agricultural purposes, because they are destitute of the stiff hairs which render many grasses unpalatable to cattle. It is only the strongest growing kinds however that produce sufficient fodder to be profitable to the farmer, and among them the Po trivialis and pratensis, two meadow species, are the most valuable.

POACHING. [GAME LAWS.]

POCILLOPORA. [MADREPORA.]

POCKLINGTON. [YORKSHIRE.]

POCOCK, EDWARD, an eminent divine and learned Orientalist, was the son of the Rev. Edward Pocock, vicar of Chieveley in Berkshire. He was born at Oxford, in November, 1604, and received the early part of his education at the school of Thame. At the age of fourteen he was entered a commoner of Magdalen Hall. After two years' residence there, he was elected to a scholarship of Corpus Christi College, to which he removed in 1620. In November, 1622, he was admitted bachelor of arts. He now began to show himself remarkable for a precocity in the study of languages, which he made extraordinary progress, first under the tuition of Matthew Parson, and afterwards under that of the Rev. William Bedwell, vicar of Tonbridge, one of the first of those who have promoted the study of the Arabic language in Europe.

His first literary work was the preparation for the press of such parts as had not been edited of the Syriac New Testament, from a manuscript in the Bodleian library, to which he added a Latin translation and some notes: the whole was printed at Leyden in 1630, 4to. In 1629 Pocock was ordained priest, and soon after appointed chaplain to the English merchants at Aleppo, where he continued five years, making extraordinary progress in the Hebrew, Syriac, and Ethiopic languages, besides acquiring a familiar knowledge of the Arabic. On his return to England in 1636, he was admitted to the degree of bachelor of divinity, and soon after nominated first preceptor of the Arabic lecture founded at Oxford by Archbishop Laud, with whom Pocock had maintained a correspondence during his stay at Aleppo, having been employed by that liberal prelate in the service of the Polyglot. He then opened his lectures with an elegant Latin oration on the nature and utility of the Arabic tongue, part of which was afterwards published ad caleam 'Carmen Tegrai,' edit. Oxon., 1641. Pocock however seems not to have entered upon the duties of his lectures at this occasion; for soon after, at the express desire of his patron Laud, he undertook a second voyage to the East, along with John Greatreaves [Greasves], and remained some time at Constantinople collecting ancient manuscripts. After a stay of nearly four years in that city, he embarked in 1640, and returned home by way of France and Italy. While at Paris he became acquainted with many of the learned men of the time, and particularly with Gabriel Sionista, a Maronite well versed in the language of the Levant, who edited some of his works [Erudis], and with Hugo Grotius, to whom he communicated a design he had of translating his treatise 'De Veritate' into Arabic for the use of the Mohammedans. Grotius having accepted it, Pocock began his task, and the Arabic version was afterwards printed at Oxford, in 1660. [Grotius.] While at Paris, Pocock heard of the commotions in England, and on his arrival he found his patron benefactor, bishop Laud, a prisoner in the Tower. [Laud.] He now resumed his private studies at Oxford. Having become acquainted with the celebrated Selden, who afterwards published part of the 'Annals' of Eutychius, in Latin and Arabic, under the title of 'Origines Alexandrini,' Pocock assisted him in collating and extracting passages from the Arabic MSS. in the Bodleian.

In 1643 Pocock was presented by his college to the rectory of Childrey in Berkshire, where he performed with the greatest zeal his duties of parish priest, visiting Oxford during term time. Immediately after the execution of Laud, the profits of his Arabic professorship were seized as part of that prelate's property, and he was reduced to his living in want. In 1647 he met Thomas Burdett, Esq., of Hampshire, and in the following year he obtained, through the interest of his friend Selden, the restitution of his salary. In 1648 he was nominated to a canonry at Oxford, and on 14th June, 1649, when a prisoner in the Isle of Wight, added a canonicity in Christ Church, which was confirmed by parliament; but the canonicity thus assigned to him being different from that originally annexed to the professorship, he made protest against it, and refused to receive the profits. In the mean time he composed his 'Specimen Historiae Arabum,' being extracts from the work of Abu-l-faraj, in the original Arabic, together with a Latin translation and copious notes. [Abulfaragi: Abulfaragii Opera, which we printed in 1648 and 1650, 4to., was reprinted in 1806, by White, with some additions by Sylvester de Sacy. In November, 1640, about a year after publishing the preceding work, Pocock was ejected from his canonicity, and it was intended to deprive him of the Hebrew and Arabic professorships; but upon a petition from the heads of houses, the masters, and scholars at Oxford, Pocock was suffered to retain his living. In 1654 he was deprived of his living, on the ground of 'ignorance and insufficiency;' at least such were the charges preferred against him by Cromwell's committee. Some of his Oxford friends however, particularly Dr. Owen, so warmly represented the degree which was proposed to be taken upon such grounds, of so eminent a scholar as Pocock, that the measure was abandoned. Soon after Pocock published his 'Porta Mosis,' being six prefatory discourses of Moses Maimonides's 'Commentary upon the Mishna,' written in Arabic, but with the Hebrew letters. This work, which was the first production of the Hebrew press at Oxford, appeared in 1655 (not 45, as printed by mistake in the article MAIMONIDES), together with a Latin translation and numerous notes. In the following year Pocock appears to have entertained the idea of publishing the 'Expositions of Rabbi Tanchum on the Old Testament,' as he had done with the 'Letters of Maimonides,' who possessed any of the manuscripts of that learned Rabbi; but, probably from want of encouragement, he did not prosecute his design. In 1657 the English Polyglot appeared, in which Pocock had a considerable hand. He collated the Arabic Pentateuch, and assisted in the translation of that part of the Bible, and the reason of the various readings to be found in them, the whole of which was inserted in the Appendix to the Polyglot. He has contributed much, in the other part of that literary undertaking by the loan of several valuable MSS. in his own collection. In 1658 his Latin translation of the 'Annals' of Eutychius was published at Oxford, in 2 vols. 4to., with the expense of the work, by the proceeds of his pen, who died before it appeared. At the Restoration, Pocock was restored (June, 1660) to his canonicity of Christ Church, as originally annexed to the Hebrew professorship by Charles I. In the same year he was enabled, through the
liberality of Mr. Boyle, to print his Arabic translation of Grotius's tract "De Veritate." He published, in 1689, an Arabic poem by Abi Isma'il Tboqraf, entitled 'Lamiyatu-l-ajjem,' with a Latin translation, copious notes, and a learned preface by Dr. Samuel Clarke. But by far the most important as well as the most useful of Pococke's works was his translation of the entire work of Abu-l-faraj, which, along with the text and a few excellent notes, was printed at Oxford, in 1663, 2 vols. 4to. After the publication of this work he seems to have shorn himself of biblical learning. In 1744 he published, at the expense of the university, his Arabic translation of the Church Catechism and the English Liturgy. In 1677 appeared his 'Commentary on the Prophecies of Micha and Malachi,' in 1685, that on Hosea, and in 1702 that on the Minor Prophets. It was his true wish to comment upon others of the lesser prophets. He died, September 10, 1691, after a gradual decay of his constitution, in the eighty-seventh year of his age.

Pocock had by his marriage with Miss Burdett nine children, the eldest of whom, named Edward, was also an Oriental scholar, and published in 1761, under his direction, the philosophical treatise of Ibn Tofayl, with a Latin translation and notes, under this title — 'Philosophus Aibodoticus, sive Epistola Abu Jafar Ibn Tofail de Haï Ebn Yolkuth,' the same which Ockley afterwards translated into English. [Ockley.] He also translated into Latin the work of Abda-l-latif on Egypt; but Ockley was the first to publish it until the beginning of the century, when White published it with the original text, Oxford, 1800, 4to. [ABDALLATIF.] Another of Pococke's sons, named Thomas, translated into English the work entitled 'Ueber die ruinirte by Manasses ben Israel, under the title — 'Of the Term of Life,' London, 1699, 12mo. An account of the life and writings of Pococke, the father, was published in 1740, by Leonard Twells, M.A., together with an edition of his Theological works, in 3 vols. 4to.

POCKECKE, RICHARD, a distinguished traveller, distantly related to the preceding, though he added an e to his name, was born in 1794, at Southampton, where he was educated until he removed to Corpus Christi College in Oxford. In 1731 he took the degree of bachelor of laws, and two years afterwards that of Doctor. After travelling in the years 1754 and 1736 on the Continent, he sailed for Egypt, in which country he remained until the spring of 1738, when he embarked at Damietta for Palestine, and taking his road through Syria, Mesopotamia, Cyprus, Candia, and Asia Minor, arrived at Constantinople. From Constantinople he sailed for Mount Athos, thence he crossed homewards through Italy, Germany, and Flanders. On his return in 1741 he published the result of his researches and observations, under the title of 'Description of the East and some of other Countries,' in which the first volume was entitled 'Observations on the Bosphorus.' In the same year Henry, Earl of Pembroke and Montgomery, appeared at London in 1743, folio; and the second, entitled 'Observations on Palestine, Syria, Mesopotamia, Cyprus, and Candia,' dedicated to Philip, Earl of Chesterfield, in 1745. In 1745 he was appointed archdeacon of Dublin, and in 1756 bishop of Ossory. He was subsequently transferred to Elphin, and lastly to Meath, where he died, in September, 1765.

Besides his 'Eastern Travels,' which are works of merit, Pococke made a tour in Scotland and published a description of the basaltic rock, in the harbour of Dunbar, resembling the Giant's Causeway. (Phil. Trans., vol. 52, art. 17.) A Description of the Giant's Causeway, and 'An Account of some Antiquities found in Ireland,' were also published by him in the 11th vol. of the 'Archæologia.' Among the MSS. in the British Museum (4511, 4597) are several volumes of the gift of Bishop Pococke, containing the minutes and registers of the Philosophical Society of Dublin, from 1683 to 1707. A French translation of his travels appeared at Paris, in 1771, in seven volumes, in 12mo.

PODAR%CIS, Wagler's name for a genus of Lizards, part of which genus is placed, by MM. Duméril and Bibron, under the genus Lacerta, part under the genus Acantho-daactus of Fitzinger, and part under the genus Eremias of the Linnean System.

PODARGUS. (Zoology.) [*Night-Jars, vol. xvi., p. 223.]

PODESTA, [Lombardy.]
PODEDECAINE, [M. R. Gray's second subfamily of the Colymbidae. [DIVERS.] The first subfamily is Colymbinae, consisting of the single genus Colymbus, Linn. (Mergus, Briss.; Utrínator, Lacép., Eulips., III.)

The Podicepses, in Linn., of Burdett, are the Podiceps, Lath. (Colymbus, Briss.), 2, Sylbeocby, Bonap. (Colymbus, Linn.; Podiceps, Ray; Podiceps, Lyell, Dasyp. S., Sw.).

PODEMYUS. [Podicepsinse.]

PODEIMA, Wagler's name for a genus of Monitor Lizards, arranged by MM. Duméril and Bibron under their genus Salvator. [SALVATOR]

PODOA, Illiger's name for a genus of Natatorial or Pat-mipeida birds, Heilornis of Bonaparte, Gréboulguesi of Buffon. They have these feet lobed, like the Porphides (Falco) and the Grebes, but their tail is more developed than in either, and their nails are sharper. Cuvier calls Notus surinamensis, Gmel., Enl., 893; Heilornis Senegalensis, Vieill., Gal., 280, as examples, and observes that M. Ch. Bonaparte (Prince of Musignano) considers, like Gmelin, that the genus should be approximated to the Anhinga. [PELECANIDAE.]

PODOLIA, or KAMENETZ-PODOLSK, a government of European Russia, formerly a part of Poland, extends from 47° 25' to 49° 43' N. lat., and from 28° 50' to 60° 08' E. long. It is bounded on the north by Poland, on the east by Kiew, on the south and east south-east by Kherson, on the south by Bessarabia, from which it is separated by the Dniest, and on the south and south-west by Austrian Galicia. The area of Podolia, which, by formerly belonging to the Ukraine, was (in 1821) and Schubert (1835) make it 19,850 square miles; but Schmidtmill (1835) prefers the estimate of Marczyuski, which makes it only 14,500 square miles. Podolia is generally a table-land, except a few no great elevation, and is a branch of the Carpathians, which enters it from Galicia; but the most elevated parts of this chain are scarcely 500 feet above the level of the sea, and only heighten the picturesque beauties of this fine province. The south-eastern part of Podolia, which by formerly belonged to the Ukraine, but now belongs to the Austrian Empire, is cultivated, and form a kind of steppe. The province is well watered. The Dniest, which is the principal river, flows indeed only along the frontier towards Bessarabia, but most of the small rivers run into it. The second principal river is the Bug. The Dniest is broad, but its course is rapid, and the navigation is rendered dangerous and difficult by numerous shallows, rocks, blocks of stone, and whirlpools. The sandstone and the sand is obstructed by large blocks of stone, which however might easily be removed. There are numerous small meres in the western part of the province, but no large lakes.

The climate is mild and in general very healthy; there are scarcely any deleterious winds, except the Pità Polonica, which will probably remain endemic as long as the uncleanness of the Russia and Poles continues. The soil of Podolia is proverbially fruitful, yielding a return, says Hassel, which is scarcelyequalised in Sicily. Why and rye often produce tenfold, and many kinds of grain, 20, and even 100 fold." Schmidtmill however says the soil is extremely productive, but without yielding tenfold, as Hassel says, who uniformly exaggerates in this particular. Besides all kinds of corn, hemp, flax, tobacco, and hops are cultivated. Agriculture is however practised in the most slovenly manner; the ground is scarcely scratched by the plough, it is never manured, and the same species of grain is often sown for several years together. Yet corn is so abundant, and of such little value, that, for want of demand, it has been often left to rot on the ground. The increasing exportation from Odessa has however caused a considerable improvement. The peasants have generally gardens, where they cultivate cabbages, onions, cucumbers, water-melons, and some fruit-trees, mostly apples, pears, cherries, and plums, but no great care is bestowed on them. The grass is remarkably luxuriant, and the meadows are very extensive, with but much game in them; stags and deer are rare; in the fields and the steppe between the Bug and the Dniest there are hares, wolves, foxes, a species of antelope, and bustards. Storks are very numerous. Swarms of locusts come periodickly from the desert, and destroy what has been sown. The breeding-grounds of birds are numerous; the oxen of Podolia are remarkably large and fine, and great droves of them are annually sent even to the middle
of Germany. The race of horses is much esteemed. The sheep are of a good breed, and their wool is tolerably fine. Some of the farmers have considerable quantities of domestic poultry and of bees. The fisheries are very productive. There is no metal except bog-iron. The other mineral products are salt-petre, stone for building, lime, ground-sand, and coal. At Salem, there is a very large iron foundry. A considerable amount of the iron is used in the manufacture of instruments for the inhabitants. There is hardly any wholesale trade in the province. What the farmer has to spare, such as corn, flour, hemp, flax, tobacco, timber, potashes, pitch, oxen, horses, tallow, the soils, salt water, which is brought from the sea to Olesea, the oxen to Brody and Germany, and carry on a profitable contraband trade with Austria and Moldavia. Almost all the brandy distilleries, which are cons- tructed on the banks of the river Smotra, are well built, and several of them are of considerable size.

The schools are few in number, and Schmidlin says he could not ascertain the number of scholars in the Roman Catholic, Greek, Jewish, Armenian, and other schools, and that there was but one printing-office (that of the government) in all Podolia. The greater part of the inhabitants are of the Greek religion. The Roman Catholics are numerous, as are also the Jews. There are some colonists, and some Greek and Armenian merchants. There are also a few gypsies. The population of this province has been stated, but it is probable that it amounts to at least 1,500,000.

The principal town is Kamienne, the capital of the province, is situated on the river Smotra, at a short distance from its junction with the Dniester. It was formerly the most important fortress in Poland, but is now deprived of its fortifications; it consists of the upper town, of the lower, which is well built, and several suburbs. It has a very fine cathedral, a gymnasium, some manufactories and trade, and 16,000 inhabitants, half of whom are Jews. The other principal towns are the capitals of the circles (12 in all), but none of these are of great importance. Mohilew alone has 7000 inhabitants, a silk manufactury, and some trade.

(Hassel: Cannabich; Schubert; Schmidlin.)

PODOPHTHALMA, POPOHTHALMIANS. Dr. Lashey divides his Podophthalms into the two orders of Branchyuridae and Maccouria Crustacea. In the Desmarest make the first order of the Podophthalma, the Decapoda, and the Branchyura and Maccouria (Branchyura and Maccouria of Latreille) families. M. Desmarest thus defines the Podophthalma:—

Composite eyes placed at the end of a movable peduncle; no simple eyes; mandibles provided with a palp; jaw-feet always having a palp adhering to their base.

M. Milne Edwards, in his Podophthalms, is the first legumin of the subclass of Masrillated Crustaceans, and observes that the Crustaceans of which this grand division is composed present such multiplied analogies to each other, that they are considered as constituting a natural group. This division, continues M. Milne Edwards, corresponds very nearly to Lamarck's order of Clusturae Pedio-

ATEx to Dr. Lashey's Malacostraca Podophthalma; but, in the opinion of M. Milne Edwards, it reposes on different bases, and can no longer preserve the limits assigned to it by those authors. We now proceed to lay before our readers the views of the last-named distinguished zoologist as to this great group.

M. Milne Edwards then observes, that the most remarkable trait of the organization of Podophthalms consists in the disposition of the respiratory apparatus. In the other crustaceans it is the general envelope of the body or a portion of the tegument, which has been converted into a respiratory organ; but in the Podophthalms this important function is nearly always entrusted to special organs which are not simple modifications of any of the ordinary appendages of the members. The existence of branclera properly so called is one of the most important characters of this natural group; but in some of the last Podophthalms these organs become rudimentary, nay, even disappear completely, and are replaced by the general tegumentary envelope, as in the genera Cymathium, Macrura, etc. On the other hand, there are crustaceans which are provided with analogous organs, but which evidently do not belong to this tribe. Thus the females of Jones [Lopoda] carry the appendages of the abdomen in the form of a long tube, and it is only by this tube that the males can enter the abdomen of the females: they are the only crustaceans actually known which, without belonging to the natural group of Podophthalms, are provided with true branchiæ; and yet these organs do not exist in both sexes; the males have them.

Another character, which is not wanting in any Podophthalmin, but which does not possess the same physiological importance, is furnished by the ophthalmic ring of the head, which is always provided with a pair of movable eyes in the lower part of which are found the eyes. But these are not the only crustaceans which have rudimentary, and moveable eyes; the Nebalius, which undoubtedly belong to another group, are equally provided with them.

The buccal apparatus of the Podophthalminians is disposed for mastication, and is always composed of a labrum but little developed, of a pair of mandibles, and of one pair at least of jaws. The second pair of jaws enter also into the composition of the buccal apparatus; they are nearly the same with regard to the post-buccal members of the fourth pair; but these organs are never enlarged and united so as to constitute a kind of lower lip or buccal operculum, as it is seen in the Edrophthalminians. Finally, in the greater number of cases the two succeeding pairs of members are equally transformed into jaw-feet, and sometimes the number of these organs is even more considerable, for in certain species (the Squillæ, for example) all the thoracic members, with the exception of the last three pairs, may be regarded as such.

The thoracic members destined for locomotion are nearly always five or six pairs; their stem is always vergiform, and their joint, which is elongated, becomes in the flat-ambulatory, sometimes carrying at the same time a flagrum, or else a palp, but hardly ever presenting at the same time two kinds of appendages. This mode of conformation of the locomotive organs clearly separates the Podophthal-

mians from all the crustaceans whose thoracic feet are lamellar, as the Nebalius, above alluded to, but is found in many other divisions of the class.

Finally, the animals of this region may be distinguished at the first glance from all the other crustaceans by the existence of the great cephalic buckler which occupies the dorsal surface of the body, and extends more or less far to the sides, and which is divided into a superior cover and a posterior one, descending slightly as the thorax.

Certain Branchiopoda have also a similar carapace, but they then differ from the Podophthalminians by some of the characters of still greater importance already pointed out.

If the whole of their organisation be taken as the basis of the classification of the Crustacea, as M. Milne Edwards states that he has attempted to do, the legion of Podophthalminions ought to be thus characterised:—

Mouth armed with mandibles and jaws proper for mastication; general branchiæ properly so called; eyes pende-

luminate and moveable; thoracic feet vergiform; a carapace.

According to the system of M. Milne Edwards, the Podophthalminians would form the genus Decapoda, and Stoma-

poda. This division, he observes, is generally accepted by the greater number of authors. According, however, to his rule, it is in the disposition of the respiratory apparatus that we ought to look for the principal bases. (Histoire Naturelle des Crustacés.)

PODOPHTHALMUS. [POTUNIRED.] R.

PODOPHYS, Wiegmann's name for a genus of Scirno-

MILLIONS, Lizards, belonging to the subdivision which have not the auditory apertures visible.

PODOPHYLLÆ, a small family of polypetalous Exo-

gans, by some regarded as a distinct natural order, and by others referred to Ranunculacece as a section. There be Papaveraceæ plants if they had consolidated carpels; but possessing no more than one carpel, they appear more proper to Ranunculaceæ, from which, in fact, they seem only to differ in having a solitary carpel, which however also occurs in that order, although not characteristic of it. The only species referred to Podophylleæ are Jeffersonia and Podophyllum, two North American plants, with succulent acid root-stocks, deeply lobed leaves, and white flowers hidden among them. They have three or four sepals, twice as many petals, indeterminate hypogynous stamens with linear or oval anthers, a thick sinus stigma, and the ovules arranged along the central suture of the solitary car-

pella. Podophyllum is a common plant in gardens, whether it has been introduced from the United States, where it is employed as a safe and active cathartic.
1st Division or Race.

Twelve feet; the six anterior terminated by hooks or ungualated. Extremity of the abdomen furnished with two bristle-like appendages or oviferous tubes, which are cylindrical and elongated.

The genera arranged by M. Desmarest under this subdivision are Anthosoma, Leach (Caligus, Latr., Lam., Risco), and Dichelestita of Hermann the younger and authors.

2nd Division or Race.

Fourteen feet; the six anterior ungualated; the fourth or fifth pair bifid; the sixth and seventh having the haunches and the thighs very much dilated and united by pairs.

Cerrops, Leach, is the only genus placed by M. Desmarest under this subdivision.

3rd Division or Race.

Fourteen feet; the six anterior ungualated; all the others bifid.

The genera arranged under this subdivision are Pandanus, Leach (Caligus, Latr. and Lam.), and Nogurus, Leach.

4th Division or Race.

Fourteen feet; the six anterior ungualated; the fifth pair bifid, with the last joints ciliated with hairs. Caligus, Müller [Caligus], and Ricerulus, Leach, are the genera arranged under this subdivision.

3rd Division.

Mouth with its aperture in the middle of five pairs of feet or jaw-feet, terminated in pincers, the haunches of which, rough with points, may serve for mastication; no antenna; shell in the form of a buckler, consisting of two pieces, and strengthened by a long sword-shaped tail; organs of respiration placed under the second piece of the shell.

Family Limulidae, Leach.

The genus Limulus (Limulus, Müll., Fabr., Lat., Leach; Monocus, Linn.; Xiphocaecilia and Xiphotheca, Gronov.; Polyphemus, Lam.; Cancer, Clus.) is the only one belonging to this division. [Xiphosurians.]

See further Suctorial Crustaceans.

POELEMBURG, CORNELIUS, was born at Utrecht, in 1556, and studied painting under Abraham Bloemaert. Having acquired considerable proficiency under him, he went to Rome, where the works of Raphael inspired him with a resolution to endeavour to imitate the grace of that great master, especially in the naked figure. But though he doubtless derived much advantage from the study of Raphael, he formed for himself a very different and entirely new style, not resembling that of any Italian master, unless it be in his adorning his landscapes with the ruins of antique buildings, which he designed with great accuracy after nature.

He excelled all his contemporaries in the delicacy of his taste and the vividity of his colouring, as well as in the choice of his subject. The skies are clear, light, and transparent, while the magnificent views of Roman antiquities in his backgrounds give harmony to the whole composition. His female figures, which he generally represented naked, are distinguished by beauty and elegance of form. It has been objected that in some representations of nymphs bathing, he has chosen exposed situations by a roadside.

Poelemburg's works were highly esteemed in Italy, and some of the cardinals used to visit him while he was painting, to observe his manner of working. He left Rome with much regret, and returned to his own country. On the way he received many honours, at Florence from the grand-duke, and had great respect shown him in all the cities through which he passed, as well as in his native city of Utrecht.

On his return he was visited by Rubens, who universally esteemed. Many eminent artists, especially Steenwyck and Cierings, got him to paint the figures in their works. The genuine pictures of Poelemburg are extremely scarce, but his designs, which are engraved on plates by P. de Lis, lend themselves in manner with such success that his paintings are often taken for works of his master. Dr. Waagen mentions the following works of Poelemburg in English collections:—at Cosham-house,
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the seat of lord Methuen, two landscapes with nymphs (to the most delicate touch is added extraordinary force and depth of tone); at Mr. Beckford's at Bath, a Repose in Egypt (a capital picture, of a larger size than usual with him, yet with all the delicacy of his smaller pictures), and very pretty little figures with nymphs in the foreground. Christ's two Disciples on the way to Emmaus (the usual delicacy of execution is here united with uncommon force); at Luton-house, a Repose in Egypt, of most delicately pure execution and soft washes of harmony.

POETRY. In the usual and proper signification of the word, is applied to any composition in metre. It designates the outward form, not the style or the subject-matter treated. As however there are certain subjects, certain feeling, that excite a kind of mental emotion, which is produced by a proper kind of metre and composition, in which these characteristics are visible, it is often termed 'poetical' or 'poetry,' just as a bad poem is called 'prosaic.' In both instances we speak thus when we wish to express praise or blame, as the case may be, and we use the words metaphorically. (See Whately's Rhetoric, page 278.)

The art of poetry is an imitative art. Its object, in common with all such arts, is to give pleasure by imitation. So far music, painting, sculpture, and poetry agree; they differ in the means which each employs to effect the imitation. Music works by harmony and melody, painting by colour, sculpture by form, and poetry by words arranged in metre. In other words, the job of the poet is the proper province of art to produce illusion, that is to say, the person whose feelings are to be affected always remains conscious that his emotion is not the result of anything really passing, but is merely another mode of feeling which the poet has produced. The imitative power of art thus consists in producing results resembling, but not identical with, those created by natural objects, or by human passion, character, and action. Hence the difference between a dramatic and a picture, or between a waxwork figure and a statue: illusion is the aim of the one; imitation, properly so called, of the other. Hence, too, it is difficult to venerate the mimicry of special sounds, such as hail or thunder, in music. The most simple art has a double purpose: in itself, it affords pleasure by its rhythm, and acts as a powerful auxiliary to the sense which the mere words express; but above all, it preserves the essence of art by operating as a constant barrier against any approach to reality. In this way the poet avows the fact that his work is a work of art, and he makes the reader or hearer aware of the relation in which he and the author stand to each other. The imitative power may work in safety when hedged off from the life of reality in the ethical form, and that is why Wordsworth lays down the 'perception of similitude in dissimilitude' as one of the principles on which verse gives pleasure.

The next question is, in what mode does poetry imitate? Painting and sculpture copy outward forms themselves; poetry and music, being restricted to instruments of a different kind, aim at imitating the effect of those forms, that is, at producing the pleasurable emotion in the reader or the hearer, though in these cases they cannot imitate the means. On the other hand, the two former arts can only represent one moment of action or expression, and must tell their story by selecting that moment properly; music and poetry can only satisfy sensations all going to make up a whole. There is one advantage which poetry possesses over all its sister arts, viz., that of being able to assert: as it is the only art which employs words, and as words are the general language, by its application to the mass of mankind towards 'realism,' while the consistent and familiar use of abstract terms and symbols implies long and severe discipline of the reasoning powers. These feelings are the groundwork of allegory. If Homer, Thirlwall observes, could thus mean that disposition of mind which we see exhibited by individuals who are called 'just,' yet we speak of her as if she were a real existing being, and paint her with a pair of scales and a sword. Thus the appeal for the real art is one deeply implanted in man; he cannot be satisfied unless character or action lie embodied to the eye by colour and form, or brought vividly before the mind by the description of the poet. Abstract terms are indistinct, and require metaphors to give them shape and make them palpable to the apprehension. One of the most wonderful phenomena connected with the Greeks is, that while the genius of the people constantly tended, as Mr. Thirlwall says, to embody the spiritual and personally the indefinite, they excelled no less in the dry and abstract studies of philosophy. If Homer, if Eschylus and Sophocles, have never been rivalled in poetry, it was Aristotle and the Greek theorists who laid down the principles of human reasoning, and left us in his 'Ethics' and his 'Politics' treatises which are still instructive in their respective departments.

We must now proceed to say something of the diction of poetry. Words are the instruments of the poet; they are the tools with which he works. We think that Mr. Wordsworth pushes his theory of simple language a little too far. We fully sympathise with his rejection of 'those phrases and figures of speech which from father to son have long been regarded as the common inheritance of poets.' Such conventional forms of expression at last become adverse to the very object of all poetry; instead of conveying any definite or substantial image, they degenerate into mere formulae of the vaguest and most unsatisfactory kind. But just as metre at once gives pleasure by its adaptation to the subject-matter, and forms a sort of framework in which the poet exhibits his composition to the reader; so the language, by its application to the mass of mankind and by its dissimilitude to the phraseology of common life, supply another twofold source of pleasure. There are ballads, and even larger compositions, in which the simple and homely diction suits the treatment of the subject and adds to the power of expression. But who will say that in such a work as the 'Agamemnon' of Eschylus, where the whole drama is knit together by one pervading feeling of mysterious dignity, the language should not bear a proportion to the other qualities of the work?

"Let gorgeous tragedy
In sceptred pall own sweet revenge by" stately and ornate diction is a part of her trappings.

We must next, as far as our limits will permit, consider the different moulds into which a subject may be cast, and according to which we call a poem epic, dramatic, lyric, &c. There is great difficulty in this part of our sub
The antients indeed applied such terms as 'epos' or 'elegieon' to the outward form only, but in modern language the matter of a poem, its length, or its mode of treatment, often deserves the title to which the form is applied. Moreover there are many works of a mixed character which we cannot place in any recognised division. To what genius Dante's 'Divina Commedia,' Wordsworth's 'Excursion,' and Spencer's 'Fairy Queen' most obviously belong, it would however be laid down, though they be incapable of definite application in every instance.

1. A poem may be in the form of a narrative of events which the poet professes to recant; although he sometimes introduces his heroes as speaking in the first person, and uses the historical present tense for the sake of greater energy, still the events are supposed to be past. The subject-matter of the list of characters described is merely put forth for his own feelings as excited by certain actions or circumstances, but describes the actions or circumstances themselves. Of this kind is all epic and narrative poetry.

2. A poet may develop the action to the reader or supposed spectator by imagining that the personages of the story show its progress and their own characters by what they themselves say and do, not by what the author narrates of them. Such a poem is more internal, and its subject-matter still more purely external. Dramatic poetry, with all its numerous subdivisions, is of this kind.

3. The author may principally aim at expressing the outward emotions and extraneous circumstances, instead of narrating what is past or supposing something present to be acted before us. His object will then be to awaken an echo of similar feelings in the reader or hearer, and thus stimulate the action of those impulses which have previously excited such feelings in his own mind. Most short compositions intended to be sung belong to this class. If the tone of thought is enthusiastic and the metre irregular, we call the work an ode; if it express tender or impassioned thought in more regular form, it is an elegy. The name 'sonnet' marks the outward form only. Perhaps no general word can be found so applicable to the greater part of those compositions which are neither epic nor dramatic, in the sense we have just given, nor so usual as to include epicam, satire, or didactic poems.

1. Epic poetry. It is a most curious fact in the history of human culture, that the earliest existing epic poem should be still unquestionably the finest. In the mechanical arts each generation profits by the dilettos of its forerunners, and builds on the foundation which it finds existing. Whatever has been achieved accumulates for the benefit of posterity. In the imaginative arts the case is worse. Every age has its sudden excitement of sudden decay of excellence are equally unaccountable. Whether composed by one or by many individuals, the works which bear the name of Homer undoubtedly possess a certain unity of style, an admirable taste, and a generous feeling which they contain, as for the vigour and life which we might imagine likely to characterise the early period to which they belong. Speaking a dialect equally expressive in energy and softness, the Greek epic owes its narrative to dwell on every part of the subject more equally than is consistent with the condensed form and single crisis of the drama. Whether in the combat, the feast, or the sacrifice, Homer's heroes and the actions in which they are engaged move before us in transparent form, like figures on a bas-relief; while a tragedy of Sophocles may be said to stand out by itself with concentrated interest and sharply defined outline, like the Laocoon or any single group of sculpture. The verse too is admirably adapted to this spirit. The hexameters, unrestricted by any pauses at fixed intervals, and thus free from the point or sententiousness of the later elegiac metre, flow on in an unbroken stream, accommodating themselves to the tone of thought and action. At the same time they are less colloquial than the tritramusio of the drama.

To Homer succeeded a number of epic poets, most of whom wrote on the subjects contained in the so-called 'Cycle,' a word which seems to designate a collection of epic poems confined to a certain range, commencing with the union of heaven and earth, and ending with the latest adventures of Ulysses in Ithaca. The whole depended on Homer's so-called 'Trojan Cycle.' After the period of the Olympiads, the 'Cycle' seems to have declined, and for three centuries the great lyric poets were most conspicuous. Roman epic poetry, like most of the literature and civilization of that people, received its first impulse from Greece. The Latin epic was so closely associated with the Roman triumph of an epic as well as dramatic poetry into Latin, were both probably Italian Greeks. Ennius too, the real founder of the Roman epics, was born at Rhodium in Calabria. It is probably right to suppose that he had undergone a full and earnest measure. No remains of Latin epic poetry between Ennius and Virgil have been preserved. In the latter author we find the reflexion of Greek poetry on the polished surface of the age of Augustus. The image of Aeneas, so beautiful, the 'Iliad' is something so entirely different in tone and spirit from Homer, and bears traces of its eotic existence, just as the Spanish poetry, after the time of Garcilasso de Vega, savours of Italian influence. The principal Latin poet, with the titer does not develop the epic, is Lucan, the 'Argonautica of Valerius Flaccus, the 'Punicus' of Silius Italicus, and the 'Thebais' of Statius. Some of Ovid's works, such as his 'Metamorphoses,' must be included in the general definition of epic poetry given above.

In modern poetry we find certain subjects which strongly remind us of the 'Cycle' in the mode in which they have furnished a constant set of themes to the poets of thc Middle Ages. The story of Arthur and Charlemagne, with their kindred legends. The cycle of Arthur was probably derived from the Celtic tribes, who seem to have sought in the exploits of their champion and the prospect of the province of the race. What they had lost in reality they made up in fiction, and communicated the interest in their own hero to the invaders who encroached on their borders.

The oldest Teutonic epic is the 'Nibelungen Lied.' It is composed in rhyming strophes of four lines each. The circle of tradition of which it treats was widely extended, and probably came from the north. The characters have a wild gigantic air, and the feeling of the poem, though the strain is one of the highest in a Christian time and country, is, as Goethe has observed, purely heathen. There is no trace of any moral influence of religion. The 'Nibelungen Lied,' in its present form, was probably composed in the time of the Hohenstaufen, about 1200 A.D.

The poem of the 'Gid' is another remarkable monument of early modern epic poetry. Mr. Southey says, 'It is unquestionably the oldest poem in the Spanish language. In my judgment it is decidedly and beyond all comparison the finest.'

The mass of epic poetry existing in the Eastern languages seems very large. The most celebrated compositions of this class in Sanskrit are the 'Mahabharata' and the 'Ramayana.' The 'Ramayana' is a heroic poem, mostly travelled over by Rama, the 'Mahan' of Firdusi (who lived about 960-1030 A.D.), in 60,000 verses. The 'Maolukati,' or collection of seven poems anterior to the time of Mohammed, of which 'Antar' is one, was probably composed in 890 A.D.

With the exception of our own Milton and of Camden, the most celebrated modern epics are those of the Italian poets. The union of the classic and romantic elements in modern poetry began in Pulci, the friend of Lorenzo de' Medici (died 1487). To him succeeded Boiardo and Ariosto. The groundwork of their fictions was the cycle of Charlemagne as developed in the yet popular story-book the 'Reoli di Francia.' The coarseness and exaggeration of Pulci are softened down into exquisite irony and satire in Ariosto.

In both writers there is somewhat of the same humorous feeling which in Cervantes formed the basis of 'Don Quixote.' Tasso imitated the antients most profusely, but he wove his imitations into an organic whole. His poem is composed with the utmost regularity, and appeals to the tender feelings and Christian sympathies of his age and country. The influence of the Italian poets on our own literature in the case of Spenser, Milton, and other writers, is most marked.

Later still, and from a different quarter, there are as fierce in the footsteps of Milton. It is scarcely necessary to mention the 'Henriada.' Scott's poems have a strongly marked epic spirit. In Byron the morbid feeling of the individual is too often visible through the thin web of the story, and there is much of the 'objective' character essential to epic and narrative poetry.

2. The analogous origin of the drama in antient and modern times is remarkable enough. In Greece it sprang from the religious ceremonies connected with the worship
of Bacchus: tragedy and comedy began respectively with the performances in the Dithyrambic and Phallic hymns. The modern drama arose out of the Mysteries of the middle ages, and in a single country of Europe the genius of the people caused it to retain its religious character to a very late period. For we cannot pretend to fix limits in this article, to discuss all the various forms of poetical composition which have prevailed, but we shall conclude by saying a few words on the subject of popular poetry and ballads.

There are few compositions so rude as not to have attempted to clothe in verse of some sort, the feelings excited by the worship of their gods, and by the dangers of the chase and the battle, or who have not pretended thus to record the exploits of their heroes. It is probable that detached fragments of this rude and simple kind of poetry always preceded the connected efforts of epic poetry. These songs, familiarised by traditional recitation, would finally be worked into a sort of cycle, like the ballads of 'Robin Hood,' and might in certain cases become the basis of larger compositions.

Ballad poetry has attracted great attention from literary men during the last fifty years. The publication of Percy's 'Relics' in this country, though not absolutely the first attempt of the kind, roused the taste of Germany. Bürger translated many of the pieces contained in that collection. Herder's 'Volkssieder' gave an additional impulse to the study, and his masterly version of the ballads of the 'Cid' has become a classical specimen. The debt which they owed for the first step; Bürger's 'Lenore' and his other works reacted on Scott. In the 'Border Minstrelsy' and the researches connected with it, a peo

The Danes, the Germans, and the Scalian nations, especially the Servians, have a good stock of old popular poetry, but the two countries which are the richest in this department are Great Britain and Spain. Our own ballads are a sort of mixture of the epic and lyric compositions. The writer sometimes expresses his own feelings; he does not narrate evenly and uninterruptedly the history of the hero, but gathers from one projecting point of the story to another, leaving to the imagination of the reader the task of filling up the intervals. Handed down for a long period by word of mouth, these ballads have suffered mutilation, and the later versions often vary much from the earlier ones, as may be seen, for instance, by comparing the two copies of 'Chery Chase. Sometimes a ballad composed for one purpose was afterward given another; and even in the whole, the remains which we still possess are most admirable.

The Spanish ballads are more epic in their character (we do not now speak of the Moorish ones). The lines are frequently artificial, as compared with the national poetry; but above all the history of the Cid and the later Moorish wars. The Spanish ballad is generally free from the gloomy supernatural machinery of northern nations. Ghosts and witches do not figure in them, as in English and Scotch popular poetry, though in one or two cases fairies occur

The lighter compositions, 'coplas' and 'canções,' are in their way just as beautiful. Some of the best seem to be fragments of old ballads that have lost their original form. Of the effect of popular poetry on the events of real life in times of revolution or disturbance it is unnecessary to speak. Those compositions which would seem to be the lightest and simplest in the national imagination, are found in immediate contact with the events of reality. Selden observes, 'More solid things do not show the complexion of the times so well as ballads and liberal songs.' It is said that during the reaching ballad of 'Ay de mi Alhamza' was forbidden to be sung in the city of Seville after the conquest. We have in Percy's collection the satirical ballad of "Richard of Almaine," composed with reference to the war between Henry III. and his barons. Popular poetry played its part in the development of the Reformation. The aburidnties and vices of the clergy were an inexhaustible theme at a later period. The song of 'Lilibulero' probably did much to facilitate the Revolution of 1688. Burnet ("Open Times," iii. 336) says of it, "Perhaps..."
Poggy islands. [Nassau islands]  

POGGY I. [Breetes.] Mr. Swainson makes the Buccoine, or Barbout, a subfamily of the Peiod, placing it after the Pecute, at the end of the family. He characterises the Buccoine thus—Bill surrounded with long bristles. Tail short, soft. 

The following genera and subgenera are arranged by Mr. Swainson on his great family:—  


T. 

[Barbados.] 

POGGONIA. Example, Athrunur exitm. P. Col., 371, f. 2.  

Pecnumus, Temm. Habit of Athrunurus, but the rictus is bristled; the tail very short and not projecting beyond the wings. Tropical Asia. (Sw.)  

Example, Pecnumus aberrans. P. Col., 371, f. 3.  

Bucco, Linn. Bill straight, strong; the base very broad, dilated, and surrounded with long and very rigid bristles. Tarsus shorter than the versatile toe. The Old World. (Sw.) (Barbes.)  

Subgenus Microgonon, Temm. General structure of Bucco; but the gape smooth. The first three quills only graduated. South America only. (Sw.)  

Exiluion Cayanumus, P. Enl., 206, f. 1.  

Genus Pogonia, Ill. General structure of Bucco; but the margin of the upper mandible distinctly toothed. Africa only. (Sw.)  

Under a line of designation, Mr. Swainson adds the genera Yunz, Linn, and Oxynychona, Temm. (Classification of Birds.)  

Mr. G. R. Gray arranges the Buccoine as the first sub-family of the Peider, and makes most of the following genera:—Barbes. Bucco, Linn.; Microgonon, Temm.; Pustom, Smith; and Pogonia, Boie. 

Pogonia is also Lacèpède's name for a genus of Acanthopterygian fishes placed by Cuvier under his family Salmoidees.

POINCA'NA ACULATEA, or the Barbados Flower-fence, is a tropical leguminous bush, about ten feet high, with bipinate leaves, obovate leaflets, prickly branches, large terminal corombose masses of ivory-coloured, covered with showy yellow or red flowers, having singularly long stamens. It has acquired its name from having been used, on account of its prickly branches, as a material for hedge-work by the native negroes of the West Indies, for which however it is ill adapted, because its branches are not much divided, and are always naked next the root. It is among the most beautiful of plants, and is chiefly on that account cultivated in the West Indies, to which it was introduced from the East Indies, more especially in Madagascar, where it blooms all the year round. The leaves when bruised have a smell of savin, and are said to have the power of bringing on abortion. They are well known to be purgative, and to have been used as a substitute for senna. According to Roxburgh, the trunk of this little tree or large shrub, when old, is constantly hollow, and occupied by a large red dark-brown ant. From this place, when disturbed, the ants issue in swarms, and inflict a severe and painful bite on their disturbers. 

POINT, in music, the subject or theme of a fugue. [Fugue.] 

POINT [SOLID, SURFACE, LINE, POINT, DEFINITION OR] POINT OF CONTRARY FLEXURE. By this term is understood a point at which a curve changes its curvature with respect to any given external point, being concave on one side and convex on the other. [See the figure in Curve for instances.] 

The mathematical test of a point of contrary flexure in a plane curve is as follows. Let \( y = x^2 \) be the equation of the curve, and let \( y' \) be the second differential coefficient of \( y \) with respect to \( x \). As long as \( y' \) and \( y'' \) have the same sign, the curve presents its convexity to the axis of \( x \), and when \( y' \) changes sign, there is a point of contrary flexure, if \( y' \) be then finite; and this, whether it passes through zero or infinity, is a characteristic of the Peicer. [Library of Useful Knowledge, 'Diff. Calc.', pp. 369, 370.] 

It is frequently stated in elementary works, that there is a point of contrary flexure when \( y'' = 0 \), and the converse. Both propositions are inaccurate; the greater is the number \( y'' \) the more probably such a point when \( y'' \) is not nothing, but infinite. For the reasons which make this inaccuracy common, see Taylor's Theorem.  

For example, let \( y = 2x - \frac{1}{x^2} \) which gives \( y'' = 2 - \frac{2}{x^2} \). As long as \( x \) is less than 1, \( y'' \) is negative, and so is \( y \), whence the curve is convex to the axis of \( x \). When \( x = 1 \), both \( y \) and \( y'' \) are zero, and \( y' \) is positive, so that the curve is still convex. But there is a change of sign in \( y'' \) when \( x \) passes through 1; and therefore there is a point of contrary flexure when \( x = 1 \). It is to be remembered that though the contrary flexure varies as \( y'' \) changes curvature with respect to any line not passing through the point, it preserves its curvature with respect to every line which does pass through the point, being on both sides convex, or on both sides concave, to that line. In the present instance, the curve is always convex to the axis of \( x \); consequently, where it has a point of contrary flexure, it cuts that axis. At every point of contrary flexure, the tangent passes through the curve, and has a sign of an order different from that which it usually has. The radius of curvature at a point of contrary flexure is always either nothing or infinite. 

Some English writers have copied the continental ones in calling it a point of inflexion. POINT DE GALLE. [Ceylon.] 

POINT WELLESLEY, Province of. [Penang.] 

POINTER, a variety of the Dog used in shooting, and trained to point at the game when the game is known to be within reach. This variety is the chien d'arre of the French, and the Canis familiaris utilis of Linnaeus. 

The old Spanish pointer was slow but very sure; and after all, where the gun is sure as the game is good, it is better to be picked up before one of these heavy but staunch dogs, now rarely to be found, and having, with the modern breed, in which quickness is carried almost as far as it can be. Not that some of these thorough-bred fine-stemmed dogs are not as staunch as the best. A pointer of the old school, and there is nothing more delightful in their dashing style of ranging. A well-bred modern English pointer with a strong cross of the fox-hound, has perhaps as much 'travel' as can well be got out of four canine legs, and on light lands is of great endurance: whilst the true descendant of the perfect Spanish Pointer was rarely good for a second day's work. That the fine-stemmed modern pointer is staunch, all who have seen him in the field must admit; but when the gun's report is not with the shot, these well-bred fine-stemmed dogs have been found when 'tried on the moors to be, though fast, not stout hunters, and unable to stand work and weather like some of their rougher brethren. 

A treatise upon dog-breaking will hardly be expected here; but those who are interested in the subject will find it well treated in Daniel's 'Rural Sports,' 'The Sportsman's Cabinet,' Colonel Hawker's well known and excellent work, and more particularly in 'Observations on Dog-Breaking,' by William Floyd, gamekeeper to Sir John Sobriquet, Bart., every word of which is worthy of the best attention. There are also many valuable hints in the 'Treatise on Shooting,' by the author of the 'Oakleigh Shooting Code,' in 'The Rod and the Gun.' 

POISON. Separate articles have been devoted to nearly all the substances which are destructive to life when taken by accident or design, or when administered with a criminal intention, it will be necessary here only to consider the subject of poisons generally, referring to the articles ARENIC, ANTIMONY, COPPER, MERCURY, PAPAYNE, &c., for the details relative to those particular poisons. The subject may be conveniently and usefully treated by pointing out how in any case of legal investigation the proofs of poisoning may be established. 

Omitting those things which are common to all cases of suicide and murder, such as the crime, the motive, the circumstances of the person supposed to be poisoned, the conduct of the accused, and those, however important they may be, that
are matters of common evidence, such as a number of persons who have partaken of the same meal being simultaneously taken ill, and symptoms which occur only how in any individual case the influence of poisoning may be proved. The chief circumstances in the evidence will be, the symptoms presented during life; the examination of the body after death; the chemical analysis of the substances involved, and the occurrence in any animal experiments by which it is attempted to produce similar circumstances in animals by similar means.

The circumstances that usually first excite the suspicion of poisoning are, that the person is suddenly attacked by symptoms of severe illness, which come on soon after eating or drinking, without any premonitory indications, which regularly increase in severity without undergoing any change in character, and which rapidly prove fatal. All these however are far from affording sufficient evidence of poisoning. Suddenness of attack is common to many disorders, as cholera (whether ordinary or Asiatic), plague, perforating ulceration of the digestive canal, apoplexy, and epilepsy; and even in some cases of fever the premonitory symptoms are too slight to attract the attention of the patient. Any of these too may come on soon after taking food, and while the patient is apparently in perfect health. The symptoms of any poisoning is especially the case with cholera, perforation of the stomach, and apoplexy; and even in some diseases of the heart the patient may seem well up to the instant of the fatal, and often instantly fatal, seizure. The permanency and regular increase of the symptoms, and the absence of any temporary diminution, is equally observed in many cases of the diseases already mentioned, as well as in most acute and uncontrolled inflammations, strangulation or other obstruction of the intestines, &c. Many of these diseases also may prove very rapidly fatal; apoplexy and certain diseases of the heart sometimes destroy life in a few seconds, and often in a few hours; in almost all cases of perforation of the digestive canal, and in some of cholera, death takes place in less than twelve hours.

In no case therefore can these, which are commonly stated as general symptoms of poisoning, excite more than suspicion; they may all have been produced by some spontaneously occurring disease. But on the other hand, the absence of any or all of them is sufficient to disprove the suspicion of poisoning. Small and often repeated doses of poison may be given so as to produce all their symptoms and death very gradually; and the patient may in such a case exhibit numerous alternations of increase and moderation of the symptoms. Many circumstances will retard the action of even large doses of poison; if a person falls asleep soon after the quantity is taken, or if a large quantity of food, or much diluted, or partially neutralised, its symptoms may not be developed for some hours, and may seem quite unconnected with the last occasion of taking food. Or again, the poison may be administered in some other manner, and be carried in some form of a vapour, by applications to the ulcerated skin, &c.

Dr. Christian divides poisons into three classes, irritants, narcotics, and narcotic-acids. Each of these produce certain symptoms in addition to those already mentioned as belonging to poisons of all kinds, and certain morbid effects upon the organs of the body when it proves fatal, by which their action may in some cases be recognised.

The chief symptoms caused by the internal administration of small poisons are those of severe irritation of some or all parts of the alimentary canal. They commonly excite burning heat, redness and swelling and sometimes ulceration of the lining of the mouth, throat, and tongue; a habit of swallowing, burning pain of the stomach with nausea and retching or vomiting, tenderness on pressure and tension of the upper part of the abdomen. The matters vomited consist, first, of the food or other contents of the stomach, and afterwards of tough mucus with more or less of blood and bile; the sickness is almost incessant, and is usually accompanied by severe suffering. The pain commonly extends from the stomach along a part of or the whole of the alimentary canal; it is often increased by a sense of nausea and retching, and by a passage of large quantities of mucus with more or less blood. The pulse is quick and feeble; there is great prostration of strength, excessive burning thirst, cold and damp skin, extreme anxiety of countenance and manner, and often a sense of breathlessness.

Many or all of these symptoms occur in all cases of poisoning by irritants, and many of them also in certain diseases, between which and poisoning it may be difficult to discriminate. Of these diseases the most important and deceptive are some cases of enteritis or diarrhoea.

The most general effect of irritant poisoning is acute inflammation of the stomach, and it is therefore a question of the first importance whether that condition is ever produced by any other means than the administration of poison. M. Louis and Dr. Abercrombie, who have placed the greatest weight in subjects of this kind, have never seen a case of idiopathic and primary acute gastritis; and it is certain that no well-established case of the kind has yet been recorded; the administration of an irritant poison may therefore be regarded as highly probable in any case in which a competent observer finds the signs of an acute inflammation of the stomach during life and its effects after death.

In such cases the principal evidence would depend on the appearances found in the dead body; in others the symptoms during life are equally important. Perhaps of all the diseases which give rise to the suspicion of irritant poisoning, the most frequent is cholera. There are however some circumstances by which they may be distinguished during life. In most cases of this kind of poisoning a burning sensation in the throat is perceived directly after the poison is taken, being the effect of its contact during swallowing; it is often acute, and of short duration. It occurs after a swallowing of swallows which, when it occurs in cholera, appears to be produced by the contact of the substances vomited, and is therefore preceded by some of the other symptoms. In cholera the vomiting is very much more violent and more frequently the act of poisoning; and the cholera that occurs in this country is very rarely fatal in less than three days; while in most cases of poisoning, in which the symptoms are sudden and severe, death occurs in a few hours, or at least by the end of the third day. Asiatic cholera indeed is commonly more rapidly fatal; but it may be distinguished by the absence or late occurrence of the burning pain of the throat, by the absence of vomiting of blood, by the peculiar expression of the countenance, and by the suppression of all the secretions except the characteristic discharges from the stomach and intestines. [Cholera.]

The symptoms of common peritonitis and of common acute enteritis [Peritonitis; Enteritis] can scarcely lead a competent witness of them to suspect that they arise from poisoning. But those of peritonitis from rupture or ulcerative perforation of any of the abdominal organs may closely resemble them, and render a diagnosis very ambiguous without the evidence of a post-mortem examination. Very severe cases of colic may also for a time simulate the effects of poison; but the frequent intermissions of their symptoms, the light pain of the general signs of inflammation, and their rarely dangerous character or fatal termination, are sufficient signs of distinction. In the cases which have been called ileus, and regarded by some as merely examples of severe colic, there has been an inflammation of the intestines, which may be the cause of the pain and vomiting, and of an obstruction of the intestinal canal. [Ileus.]

Other cases which are usually mentioned as simulating the effects of irritant poisoning, are those in which the stomach having been greatly distended by glutinous feeding, death has occurred suddenly from apoplexy or some unknown influence; and those in which death occurs from drinking cold water while over-heated. In the former cases death, if not produced by distinct apoplexy, is preceded by symptoms more like those of narcotic than those of irritating poison; in the latter, the symptoms are very like those of common cholera, and are in the same respects different from those of poison.

It is evident from these circumstances, that in a fatal case of suspected poisoning by an irritant substance, it will seldom be possible to decide upon the evidence of the symptoms alone. When poison has actually been taken, the symptoms are sometimes so modified by circumstances peculiar to the case, that even where they have been carefully observed, much doubt has remained respecting their cause; and, on the other hand, the effects of naturally occurring disease often too closely resemble those of poison to permit a positive conclusion being arrived at. Cases very rarely occur in which (unless other circumstances not connected with the condition of the patient after the sequence of the disease is evidence of post-mortem examination) is not absolutely necessary.
The most general morbid appearances produced by the irritant poisons are either the destruction, by corrosion, of the tissues over which they pass, or some of the effects of acute inflammation in them. Of the latter, that which is the least decisive is the most common—redness. In the stomach, no kind or degree of merely vascular redness of the mucous membrane can alone certainly prove that it has been irritated by a poison, and a rector's ultimate reliance, in cases where the person has had no gastric affection, and may be produced in any part of the stomach by the blood settling in its vessels after death, or being obstructed in them by suffocation. It is probable also that, when the stomach is empty and a shorter death, may produce considerable redness of the stomach. Small quantities of blood may also be effused between the lining of the stomach, from any of the causes which produce general diffused redness of the mucous lining of it, the anus, or the diaphragm; but distinction from the considerable effusions of blood, especially when they appear as if incorporated with the tissue, and are of a brown or black colour, as if charred, are almost certain signs of poison. Any appearance of blackness, or of a dark brown discolouration of the stomach, as if from a chemical change in the blood filling its small vessels, is also a very suspicious, though not a certain sign. When redness of any part, or of the most of the lining of the stomach, is accompanied by the secretion of a large quantity of tough mucus upon it, it may be deemed suspicious, but it is by no means a conclusive evidence of poison; it is more nearly so when the mucus is stained or streaked with blood. Any purplish discoloration of the swollen, or charred, or blackened stomach is decisive of inflammation; and of poisoning, if, as is most probable, acute inflammation of the stomach never arises from natural causes. The effusion of blood however is not a common effect of poison, and tough mucus is often mistaken for it; they may be distinguished by the former being rosy, glaring, and transparent, the latter opaque, white, and deposited in a tender brittle membrane or in irregular film. The swelling of the mucous membrane of the stomach, and the case with which it may be separated from the subjacent tissues, are signs of inflammation, when combined with an intense bright redness, or the effusion of much mucus or lymph; without coincident redness they are not to be depended on, since they may result from the digestion of the walls of the stomach, which sometimes takes place after death. An increase of thickness in the mucous and other membranes, by the effusion of serum beneath them, is a suspicious but far from a conclusive sign of acute inflammation.

The more serious changes resulting from poisons, such as ulcers and perforations of the stomach, differ according as they are produced by the poison itself, or by the substance taken, or by the inflammation which it has excited. In the case of corroding substances, a principal sign by which their effects would be distinguished from ulcers which are the results of disease, is, that every part of the disease is usually recessed; and that in other diseases which may be aseptically affected at the same time, the lips, mouth, esophagus, stomach, and even the intestines, all showing more or less of their influence; whereas it is very rare for diseases to affect more than one of these parts at a time. The appearances of an ulcer, or a perforation of the stomach, produced by corrosion, is also peculiar; it is commonly large and irregular; its edges are soft and pulpy, and usually black or brown, as if charred; and if the patient has survived only an hour or two, signs of acute inflammation will be seen in its neighbourhood, and in all the parts to which the corroding material has obtained access. Similar signs of acute inflammation are always observed in ulceration or perforation which sometimes, but very rarely, is produced by poisons that merely irritate the digestive canal; and these are a part of the signs by which those effects of poison are to be distinguished from those of ulcer or perforation naturally.

Ulcera tion and perforation of the stomach are so rarely the effect of merely irritant poison, and so commonly the effect of disease, that, unless there be signs of corrosion, they afford evidence against, rather than for, the suspicion of poison; and if there be no other evidence, and no coincident sign of recent acute inflammation, they may even be regarded as proofs that such a suspicion is incorrect. Of the forms of perforation of the stomach from other circumstances than poisoning, one is always the result of inflammation, without any material alteration in the surrounding parts, one or more small ulcers form in the stomach, and becoming gradually deeper, at last, by a minute aperture, make their way through its walls, and permit its contents to escape slowly into the abdomen. These may be known at once to be the effects of disease, and not of recent perforation in the lining or other tissue around them. Another form is accompanied with thickening of a considerable extent of the tissues adjacent to the ulcer, which is from a quarter to a half an inch in thickness, of a hard and irregular orifice, forming a hole with smooth edges, as if a piece of the stomach had been cut out by a sharp instrument. The thickening around the ulcer, which has all the characters of chronic morbid change, the inflammation, and the commencements of cicatrization, with the absence of all signs of acute disease of the stomach, are usually quite sufficient to distinguish this form of perforation. A third, which can scarcely give rise to doubt, is that consequent on the ulceration of the stomach, accompanied by sudden disease of the stomach. A fourth is that in which a portion of the walls of the stomach is dissolved or digested by the gastric juice after death; but whatever uncertainty may be respecting the circumstances under which this singular effect is produced, there ought to be none in distinguishing it from the effects of poison.

From these statements it will appear that in some cases the symptoms produced by the stomach are such as are such that irritant poison has been taken. The diseases in which the similarity of the symptoms is most embarrassing, as cholera and peritonitis, are those in which the morbid appearances are most distinct from perforation of the abdominal viscera; in such cases, in which the stomach is in a peptic condition, perforation of the stomach, in which the morbid changes of structure are least decisive are those in which the symptoms admit of little doubt. This however cannot apply to all, though it may to the majority of cases. When death is produced simultaneously, the symptoms may be obscure, and the morbid changes very like those of disease; and still more difficult cases occur in which poison is taken by those who already suffered from disease of the stomach, a peculiar individual, deceptive appearances may be produced by the digestion and other changes in the stomach which occur after death. Cases of these kinds form a numerous class, in which the test of chemical examination, which indeed should be neglected in none, can alone be conclusive.

For this part of the subject however no general rules can be laid down. The detection of each poison must depend on the proper application of its appropriate tests; and these will be found in the several articles already referred to. [Arsenic, &c.]

The symptoms produced by the different narcotic poisons are more varied than those of the irritant class. The most common appears to be a depression of the vital powers, which causes the habitual state of sensation, and the sleep, stupor or perfect insensibility, loss of power of the voluntary muscles, or convulsions of various kinds, and towards the close, complete coma. To these the several species of narcotic poisons add effects peculiar to themselves; yet not excluding those which are common to the two classes, as some naturally occurring diseases. The symptoms of apoplexy, for example, are almost exactly similar to those of poisoning by opium and the substances allied to it. In certain cases however the following circumstances may distinguish them. Apoplexy, though its actual attack is sudden (which the effects of opium are not), is often preceded by warning symptoms, such as headache, occasionally a sensation of pins or needles, &c. If so severe as to simulate poisoning, it is not possible to arouse the patient from his stupor; but in poisoning with opium this may usually be effected within a few hours of death; in apoplexy, convulsions often occur, in the former pupil is commonly dilated, in the latter contracted. Narcotic poisoning, if not fatal in twelve hours, is usually recovered from; apoplexy often terminates fatally after several days.

These distinctions will seldom serve further than to establish a very probable conclusion; and doubt may still remain in cases of this kind after a post-mortem examination. The evidence of poisoning afforded by it is commonly negative; the fulness of the vessels of the brain and the other slight differences in the complete state of the body, as compared with healthy persons, that are commonly quoted as signs of the effects of narcotic poisons, are very unsatisfactory. It is probable that narcotics destroy by producing a kind of apoplectic attack, and these symptoms, with their consequences, they lead exactly resemble those of that disease, whether of those cases of it which are attended with effusion of blood in
Blue vitriol and other compounds of copper.—White of eggs with water; sugar and water.

Antimony.—Large quantities of warm water or milk; do not use in powder of bark or gall-nuts.

Nitrate of silver—(argent causticus).—Common salt and water

White vitriol and other compounds of zinc.—Milk; carbonate of soda in water.

Compounds of lead.—Emetics, sulphates or bi-carbonates of lead; milk.

Laudanum and other preparations of opium.—Emetics; dressing of cold water on the face; strong coffee; forced exercise by constant walking.

Prusiac acid—(potassium cyanide), to be smelled and taken in small doses; chlorine; dressing with cold water.

Strychnine, and other vegetable alkalis.—Emetics; warm water; decoction of bark or gall-nuts.

For other, as in the cases of poison, it will always be right to excite copious vomiting, either by tickling the throat, or by giving a powerful emetic, such as from to twelve grains of sulphate of zinc (white vitriol), or the same quantity of powdered ipecacuan with one or two grains of tartar emetic; the action of the emetic should be maintained till all the poison seems to be discharged, by repeated draughts of milk, or flour and water, or sugar and water, or some other bland fluid. For the subsequent treatment of convulsive fits, no rules can be given.

POISSY. (SEINE ET OEISE)

POITIERS, a town in France, capital of the departement of Vienne, on the river Clain, a feeder of the Vienne, 36 miles south-west of Poitiers, on the road by the road through Orleans, Blois, and Tours; 46° 36′ N. lat., 0° 20′ E. long.

This town was known to the Romans by the name of Limonum [Aigues, Poil.], or Lemunum (Caes. or Lemu- num). The Tab. Peutingerii shows the city under the name of Lemunum, or Pictum, a Celtic nation, whose name was, at a later period, given to the city, whence the modern form of Poitiers for the town, and Poitou for the province in which it is situated. This city was conquered about the middle of the fifth century of his command (Caesar, De Bell. Gall., lib. III., c. 11.), but afterwards sent eight thousand men to the general con-

and the difficulties that may arise in their first access exist, of distinguishing between the acute inflammatory diseases of the brain and those of the narcotic-acid and some of the narcotic poisons. The true nature of the narcotic-acids, which are composed of those of the other two classes, are also in most cases as uncertain as those of the narcotics, and the difficulty with them is much in-

creased by the present imperfection of the chemical tests of their presence in mixtures.

The evidence to be drawn from experiments with the substances supposed to contain the poison can rarely be needed, or be of much weight when obtained. In any case in which there is sufficient poison present to produce symp-

oms in any animal to which it is given, it ought to be disco-

vered by the much more certain test of chemical analysis. This last, the evidence of chemistry, is certainly the least fallible of all; and in cases in which it can be applied, it is of the utmost value. The poison is often so minute as to be detected in the cases of poisoning by irritants, and many of those by narcotics and narcotic-acids; but in many of those by the two last classes, owing to the present imperfection of the tests for organic acids, it is very difficult to separate the two. In these also, as we have already shown, the evi-

dence of symptoms and of the morbid appearances, is also often fallacious; and cases must frequently occur in which the evidence from all these sources together will not con-

stitute a proof that poison has been taken. In the case of ir-

ritant poisons, on the other hand, the cases are few in which, from one or other of these kinds of evidence, their administra-

tion may not be satisfactorily proved.

We may consider the substances which should be ad-

ministered in cases of poisoning, as early as possible after it has been swallowed.

Mineral acids (sulphuric, muriatic, &c.).—Chalk* or magnesium water; soap and water, and afterwards milk and other diluents.

Alkalis (soda and potash).—Vinegar and water; almond or olive oil; any innocence acid with water.

Oxalic acid.—Large quantities of chalk or magnesium water; soap and water, and afterwards milk and other diluents.

Arsenic.—Powerful emetics if vomiting has not com-

menced; large quantities of milk or some thick bland fluid, such as flour and water, or sugar and water.

Corrosive sublimate and other compounds of mercury.—White of eggs beaten up with water; decoction of bark or gall nuts.

* In any cases in which chalk is recommended, the plaster of the ceiling or walls of a room rubbed into powder and mixed pretty thickly with water may be used with equal advantage.

or upon the brain, or of those in which only the least pos-

sible alteration from the healthy structure can be detected.

(Apoxyia.) Effusion of blood in the brain however is very

frequent in cases of poisoning, and in such an appearance there would be itself afford strong evidence of apo-

xyia the result of disease.

The symptoms of epilepsy are often very like those of poisoning by prussiac acid, and by some other narcotic and nuncotic-acids, such as belladonna, strychnia, &c. The following circumstances however distinguish epilepsy: the fit is often preceded by warnings; it almost always com-

mences suddenly and violently; the patient cannot be roused from it: while with the poison, especially when there is a first attack, it is so only after several hours. In many cases the post-mortem examinations of epileptic patients detect no signs of disease; and in these there must always be some doubt as to this negation, the only symptom common to them and to the narcotic poisoning. But in many, inces of old disease in the brain are found, which of course afford strong presumptive evidence that poison has not been taken. If a patient has died in a fit resembling those of epilepsy, and no morbid changes are found in his brain, poison must be strongly suspected, because it is very rare for such a fit, the result of disease, to terminate fatally, except in those whose brains are previously much diseased.

In all cases it is necessary to allude to the difficulty that may arise in their first access exist, of distinguishing between the acute inflammatory diseases of the brain and those of the narcotic-acid and some of the narcotic poisons. The true nature of the narcotic-acids, which are composed of those of the other two classes, are also in most cases as uncertain as those of the narcotics, and the difficulty with them is much in-

creased by the present imperfection of the chemical tests of their presence in mixtures.

The evidence to be drawn from experiments with the substances supposed to contain the poison can rarely be needed, or be of much weight when obtained. In any case in which there is sufficient poison present to produce symp-

oms in any animal to which it is given, it ought to be disco-

vered by the much more certain test of chemical analysis. This last, the evidence of chemistry, is certainly the least fallible of all; and in cases in which it can be applied, it is of the utmost value. The poison is often so minute as to be detected in the cases of poisoning by irritants, and many of those by narcotics and narcotic-acids; but in many of those by the two last classes, owing to the present imperfection of the tests for organic acids, it is very difficult to separate the two. In these also, as we have already shown, the evi-

dence of symptoms and of the morbid appearances, is also often fallacious; and cases must frequently occur in which the evidence from all these sources together will not con-

stitute a proof that poison has been taken. In the case of ir-

ritant poisons, on the other hand, the cases are few in which, from one or other of these kinds of evidence, their administra-

tion may not be satisfactorily proved.

We may consider the substances which should be ad-

ministered in cases of poisoning, as early as possible after it has been swallowed.

Mineral acids (sulphuric, muriatic, &c.).—Chalk* or magnesium water; soap and water, and afterwards milk and other diluents.

Alkalis (soda and potash).—Vinegar and water; almond or olive oil; any innocence acid with water.

Oxalic acid.—Large quantities of chalk or magnesium water; soap and water, and afterwards milk and other diluents.

Arsenic.—Powerful emetics if vomiting has not com-

menced; large quantities of milk or some thick bland fluid, such as flour and water, or sugar and water.

Corrosive sublimate and other compounds of mercury.—White of eggs beaten up with water; decoction of bark or gall nuts.

* In any cases in which chalk is recommended, the plaster of the ceiling or walls of a room rubbed into powder and mixed pretty thickly with water may be used with equal advantage.
Lore. In their retreat, they were intercepted near Poitiers by the French army of about 50,000 fighting men under the command of Philip III (a.d. 1353), who had captured Édouard, the experience of Chados, and the superior skill and efficiency of the English archery, obtained a complete victory. Jean himself, his youngest son Philippe, thirteen counts, an archbishop, and twenty-two thousand men-at-arms were taken; and eleven thousand men, including a great number of nobles, fell in the battle or the pursuit. The English and Gascons lost nine hundred men-at-arms, and fifteen hundred archers, and a large number of their baggage, which is vividly described by Froissart, won for him universal applause. The captivity of the king, a heavy sum for the ransom of the captive nobles, and an immense bounty recently restored to his exchequer; the conquerors returned to Bordeaux too much weakened for further operations, and anxious rather to secure what they had got, than to obtain further advantages. Poitiers was surrendered to the English by the treaty of Brestigay (a.d. 1360), but reverted to France by the voluntary surrender of the townsman, in 1372, to Charles V, who, in consideration of this act, granted them great privileges. In the religious wars of the sixteenth century, the townsman, who had been enticed over to the Heresy side, was at length, through much seduction and cruelty of the Roman Catholics, who besieged and took the town. Admiral Coligny afterwards endeavored to retake it, but without success.

Poitiers is on a stony hill, at the confluence of the rivers Boivre, or Biévre, and Clain. It is surrounded by an antient wall, enclosing an oblong area of sufficient extent for a population of 80,000 or 100,000; but the area is now divided more by gardens, paddocks, and meadows, than by streets. The streets are narrow, gates, curious of which are connected with as many bridges over the Clain. The streets are crooked, and trenchantly paved, and most of them steep. The squares are small, irregular, and many (except one) are enclosed. The houses are of the most antient character, such as are seen in villages, without regularity, taste, or convenience. Yet, notwithstanding these drawbacks, the town, from the air of antiquity which it imperfectly retains, has an advantageous situation on the slope of a hill, and from the winding course of the two rivers, presents, when viewed from the adjacent eminences, a very picturesque appearance. The public walk called Le Pacte de Blossac, on the banks of the Clain, commands a beautiful prospect, and the public buildings of the town are interesting from their antiquity, if not remarkable for beauty. Near the city, on the south side, there are some arches remaining of a Roman aqueduct, and in the garden of a Recollet monastery, the remains of a Roman amphitheatre. Some towers remain of the Gothic castle, which, in the middle ages, defended the place, and which are now converted into a depot for gunpowder. The town contains an oblong square building, which bears the air of architecture and pretension. The cathedral is very antient. It was commenced by Henri I. of France (a.d. 1042, 1060), and finished more than two centuries afterwards. The nave is wide, but not sufficiently lofty, supported on sixteen pillars, which separate it from the broad side-aisles, each nearly as high as the nave itself. The architecture is distinguished by simplicity and boldness; but the organ-loft is modern, and ill accord with the general character of the building. The rich treasures and numerous monuments of this church have disappeared. Another church, that of St. Jean, is of great antiquity: it has been once a baptistery. The church of Saint Radegonde is remarkable for its wide and handsome nave without pillars.

The population in 1831 was 23,128; in 1836, 22,000. Poitiers is not a place of much business. Common woolen cloth, coarse flannel, and blankets; cotton wicks for lamps and candles; bowery, bags, and lace; leather, sheeckskins and goose-skins with the down on for trimming, are made or prepared, though not to any great extent. Considerable trade is carried on in trefoil and lucerne seed; corn, wine, wax, and wax, and oil, and to a small extent in wool, and in articles of the cutlery trade, not two or three weekly markets, and two, or according to other authorities, four fairs in the year. There are quarries of freestone in the neighbourhood. Poitiers is the seat of a Cour Royale and an Intendance, which have jurisdiction over a circuit comprehending the counties of Niort, Cherré, Poitou, Deux Sèvres, and Vendée, and of a bishopric, the diocese of which includes the departments of Vienne and Deux Sèvres: the bishop is a suffragan of the archbishop of Bordeaux. There are a subordinate court of Council, a civil and a criminal, and a number of police and administrative government offices, a chamber of manufactures, a society of agriculture, commerce, and art; a faculty of law attached to the Académie Universitaire, a royal college with a library, and a number of secondary and departmental seminaries for the priesthood; secondary schools of medicine, surgery, and pharmacy, with a cabinet of natural history; a public library of 22,000 vols.; a free school for drawing and architecture; a botanical garden, where lectures are given on the botanic and agronomic sciences; several hospitals; a maternity society, and a theatre.

The arrondissement of Poitiers has an area of 760 square miles, and comprehends 62 communes. It is divided into two districts, the north and south, which is regulated at the time of the last census of 1841 by the departmental law of 1833. The population in 1831 was 94,770; in 1836 it was 95,029.

POITOU, a province and military government of France before the Revolution. It was bounded on the north by Auvergne, on the north-east by Touraine, on the east by Berry and Marche, on the south-east by Limousin, on the south by Angoumois and Saintonge, on the south-west by the district of Aunis, on the west by the ocean, and on the north-west by Bretagne. Its form was irregular, extending in length 160 leagues and breadth 83 (population 1372). There were two baronies, one on the south-east, from the coast opposite the little island of Noirmoutier (which, with the Isle of Yeu, belonged to Poitou) to the neighbourhood of Rochecouart, and in breadth on the coast to the Vienne, at a distance of 13 leagues from its junction with the Vienne to Anuary near St. Jean d'Angély. It was divided into Le Haut Poitou, or Upper Poitou, and Le Bas Poitou, or Lower Poitou; of which Poitiers (population 22,800) was the chief town (population 1863). The Haut Poitou comprehended the districts of Haut Poitou proper, Le Loudeac, Le Marebelais, Le Thouarsais, Le Niortais, or territories of Louden (population 3032), Mirebeau, Thouars, and Niort (population 1347), and upon the districts of which Parthenay (population 4288) was the chief town. Poitou is now included in the departments of Vienne, Vendée, and Deux Sèvres. Some very small portions are included in the departments of Charente, and Haute Vienne. The population given above is that of the communes, and from the census of 1836. Poitou was included in the Romans in the province of Aquitania Secunda, and from them it passed successively to the Visigoths and the Franks; and upon the dismemberment of the Frankish monarchies under the Merovingian and early Carolingian princes, it was included in the kingdom or duchy of Aquitaine. Under Charlemagne (and indeed under the Merovingian monarchy) it was included in the county of Poitiers; and in 845, by treaty between Charles le Chauve and his nephew and feudal subordinat Pepin, king of Aquitaine, the provinces of Poitou, Saintonge, and Angoumois were given to Charles le Chauve, or given to Charlemagne, of which Parthenay (population 4288) was the chief town. Poitou is now included in the departments of Vienne, Vendée, and Deux Sèvres. Some very small portions are included in the departments of Charente, and Haute Vienne. The population given above is that of the communes, and from the census of 1836. Poitou was included in the Romans in the province of Aquitania Secunda, and from them it passed successively to the Visigoths and the Franks; and upon the dismemberment of the Frankish monarchies under the Merovingian and early Carolingian princes, it was included in the kingdom or duchy of Aquitaine. 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the sole authority in his county, to which he added the county of Auvergne and the duchy of Guienne on the death of Raymond Perm. This was a royal achievement, and the acquisition of these dignities. The lords of Guienne and the people of Auvergne, however, being attached to the house of Toulouse, refused to acknowledge Guillaume, though Louis d'Outremer, the son of Louis, succeeded in getting invitations to the domains of Guillaume. After this, the Grand, count of Paris, prevailed on Lothaire, who had just succeeded Louis, to grant the duchy to him. Hugues and Lothaire advanced with an army to Poitou, and laid siege to Poitiers (a.d. 955); but the French were unsuccessful, though the invaders cut to pieces the army of Tête d'Étope, who attacked them on their retreat. Tête d'Étope ultimately succeeded in possessing himself of the counties of Auvergne and the county of Aquitaine, in which last, as well as in his county of Poitiers, he was succeeded (a.d. 963) by his son Guillaume II.

Guillaume II, surnamed Fier-à-bras (Fera brachia, or Ferox brachium) from his great strength, was obliged to cede Loudun and some other places to Geoffroi, count of Anjou, by whom he had been beaten in battle (a.d. 985). He refused to acknowledge the title of Hugues Capet to the crown; and in consequence Hugues invaded Poitou and laid siege to Poitiers (a.d. 988 or 990), but was obliged to raise the siege, and effected his retreat with some difficulty. Fier-à-bras made peace with Hugues Capet, and soon afterwards abdicated his honours and retired to a monastery (1004), and was succeeded (1015) by his son Guillaume le Grand, to whom he is said to have bequeathed not only the county of Poitou and the duchy of Aquitaine, but likewise the counties of Limousin and Saintonge and the district of Aunis. Guillaume le Grand acquired by marriage, according to some authorities, a large share of the Marche, and extended his territories from the Atlantic to the Rhône. By a subsequent marriage he acquired the duchy of Gascoigne; and, by a third marriage, allied himself to the house of Bourgogne. He was the most powerful of the French grandees of his time. The nobles of Italy offered him the crown of that country; but finding that the offer was by no means a unanimous one, he declined accepting it. He was the first prince of western Europe, and in a barbarous age was a cultivator and a patron of letters. On his abdication (a.d. 1029), his county of Poitiers and duchy of Aquitaine passed to his son Guillaume IV., surnamed Le Grand.

Guillaume le Gras was engaged in war with Geoffroi Martel, in order to recover the counties of Bordeaux and Saintes, but was killed while besieging a castle in the district of Aunis. Guillaume V., surnamed Aigret and Le Hardi, a son of Guillaume le Grand by his third wife, succeeded England as his father of Poitiers and duchy of Aquitaine (a.d. 1039), but not in the duchy of Gascoigne, of which Bernard, count of Armagnac, possessed himself. He too was engaged in war with Geoffroi Martel; and, in 1049, had to fly from his domains. He was succeeded by Guillaume his own brother Gui-Geoffroi, who had previously acquired the duchy of Gascoigne by the expulsion of the count of Armagnac. On the death of Guillaume le Hardi, Gui-Geoffroi succeeded, and took the name of Guillaume VI. (a.d. 1068). He undertook under his government a considerable portion of the south-west of France, and recovered the counties of Saintes from the house of Anjou; the county of Bordeaux had been previously restored. He died in 1086, and was succeeded (a.d. 1088) by his son Guillaume VII. called Le Jeune.

Guillaume le Jeune assumed the title of count of Toulouse in right of his wife, who was daughter of Guillaume, brother of Raymond, the duchy. He died during the absence of Raymond, who was engaged in a crusade [LANGUEDOC], possessed himself of the county, which however he was afterwards induced to resign. Notwithstanding this failure, Guillaume retained great power: the counts of Angoulême, Périgord, Marche, and Auvergne were his vassals, and his accomplishments as a knight and poet increased the exaltation of his rank. His verses are the most antient of the extant poetry of the Troubadours, and attest the gross irregularities of the morals of that age, to which he himself largely participated. Seized with the devotion of the times, he set out for the Holy Land (a.d. 1101) at the head of an expedition of 140,000 men, who were followed by at least an equal number of their women, children, and serfs. But when, as the 'sacred grims.' This expedition was designed to strengthen the newly founded kingdom of Jerusalem, and comprehended among its leaders Anselme, archbishop of Milan; Guelph Valois, the protection of whom was considered essential in the eyes of the French lords; Prince Gaufridus, brother of Philippe I. of France; Geoffroi, count of Provence; Etienne, count of Blois; Herpin, viscount of Bourges; Etienne, count of Bourgogne, or Franche Comté; and other nobles of France, Lombards, and Southern Germany. But this immense host was diminished by the attacks of the Bulgarians, through whose territory it marched, and entirely destroyed in its progress through Asia Minor, very much through headstrong rashness and want of subordination. Guillaume le Jeune took refuge at Tarsus in Cilicia, from whence he proceeded to Antioch and Jerusalem. He returned to his dominions (a.d. 1103), and recorded his disastrous expedition in a poem now lost. The dissolution of the French counts of the middle ages was an affair more closely connected with the church, and the restlessness of his disposition led him continually to engage in war. He conquered the county of Toulouse a second time (a.d. 1114), but his garrisons were driven out while he was in Spain with an army which contributed so largely to the capture of Cordova (a.d. 1120). He afterwards engaged in a dispute with Louis VI. de Gros, in order to protect his vassal the count of Auvergne, whom the king had undertaken to support against an attack on his part by the rising power of the crown enabled Louis to raise, he hastened to make his submission (a.d. 1126). He died shortly after (a.d. 1127), as it appears of premature old age induced by his debauchery and luxurious life. In 1046, Guillaume VIII., though less debauched than his father, was fond of war. He conquered part of the district of Aunis (a.d. 1130, seq.), and, in alliance with Geoffroi Plantagenet, count of Anjou, attacked Normandy. He died on a pilgrimage to S. Jago de Compostella in Spain (a.d. 1137), leaving his dominions to his eldest daughter Eléonore, who, after being married to (a.d. 1137) and repudiated by (a.d. 1129) Louis VII., wife of France, married, just two months after her divorce from Louis, to Henry Plantagenet, duke of Normandy, count of Anjou, and, in the sequel, king of England. The extensive territories which this marriage added to Henry's already considerable dominions made him more powerful than any of his predecessors. He reorganized Poitou, and the rest of the duchy of Aquitaine, to his eldest son Richard, afterwards Richard I. of England; but both Henry and Richard had to maintain frequent contests with their vassals, whom their own tyranny or that of their officers, or the intrigues of the French court, continually excited to rebel. The violent character and warlike spirit of Richard involved him in hostilities with the neighbouring grandees, with the French king, and ultimately with his own father Henry II. of England. After his return from the Holy Land, he granted the county of Poitiers and the duchy of Aquitaine (but not in full proprietorship) to his nephew Otton or Otto of Germany; for whom he afterwards repudiated him. On his return, the duchy reverted to his mother Eléonore, who was yet living, and who associated her son Jean or John, king of England, with herself in these possessions. Otton, who appears never to have received the full amount of his concession, had agreed to purchase them, now reclaimed possession, but without success. Eléonore retained them almost, if not quite, till her death (a.d. 1203 or 1204). She had been married to an Englishman, Sir Arthur de Poitou as part of his inheritance, but was defeated and taken by John at Mirebeau. Philippe Auguste, the ally of Arthur, shortly afterwards overran Poitou (a.d. 1204). Scarcely any possessions were made. The tyranny of Richard and the baseness of John had estranged the affections and allegiance of their vassals. Simondi considers that the sentence of forfeiture of all his lands in France, which was pronounced against John by the court of
peers of France, was subsequent to the conquest of Poitou, Normandie, and other of his territories; and that it merely gave a legal sanction to a conquest which had previously been achieved by force of arms. Thus fell the great county of Poitiers, the holders of which had played so important a part in the affairs of France.

Poitou was given by Louis IX. to his brother Alfonse, on whose death (A.D. 1271) the title of it was disputed between Philippe le Hardi, king of France, son of Louis IX., and Charles of Anjou, brother of Alfonse and king of Navarre and king of England. After a legal contest of many years, the county was adjudged to Philippe, who reunited it to the crown. Poitou was overrun by the English in the war of Edward the Black Prince in France (A.D. 1356), and Philip VI., king of Navarre (A.D. 1350) in full sovereignty to Edward III. of England, who bestowed it on his son the Black Prince as a dependency of the English crown. [Bordeaux]

The defeat of the English fleet by the Castilians of Realceede (A.D. 1872) enabled the French to reconquer Poitou. The Duke of Berri and the constable Duguesclin broke into the province with their armies. Poitiers opened its gates, other places were taken by force, and Poitou finally reverted to the dominion of France (A.D. 1372). It was given by Charles V. to Jéan, duke of Berri, as an appanage; and afterwards by Charles VI. to his son Charles VII. when dauphin; but on his accession, he fell in with the floods of the enemy, from which it was never afterwards alienated. (L'Art de vérifier les Dates; Simon, Hist. des Français.)

POKE. [PHYTOLOGIA.]

POLA, ANTIQUITIES OF. [Istria.] The most remarkable of the architectural remains at Pola is the amphitheatre. Though in its general plan and disposition it is nearly similar to all other edifices of the kind, it is marked by peculiarities. Like them, it is adorned and its transverse or greater axis, which runs nearly in the direction of north and south, is 436 English feet, while its lesser axis, or conjugate diameter, measures 340; consequently it falls short in size of one at Nimes, the measurements of the latter being respectively 506 and 404 feet; yet it is a tribe larger than that at Nismes, since the last does not exceed 430 by 337 feet. It is erected partly upon a rocky hill, on its eastern side, where there is only one tier of arcades, with another of square-headed openings or windows above, while the western side, or that facing the sea, has two tiers of arcades, besides an additional story beneath it, forming a series of square-headed doorways or entrances. In point of architecture it is remarkable as being the first example of that peculiar mode of bold rustic work [Rustici] with deep channels (as well for the voussoirs of the arches as for the horizontal courses), which was afterwards so greatly affected by the Romans, when engaged in arches and structures of the Florentine school; and it is further remarkable for the irregularity both of the depth of the courses of stone and of the size of the stones themselves, owing to which last circumstance their joints do not form a true symmetry and even in a work of such magnitude and massiveness this disregard of nicety in that respect adds perhaps as much to the idea of rude strength as it detracts from finished elegance of workmanship. Both orders to the stories in arcades—if orders they can be called, for they consist only of pilasters, partly encased in the rustics of the piers, without any regular entablature, the arcitrave and frieze being supplied by horizontal courses of rustic—are treated in the same way as the other part of the amphitheatres which are known to us. Only the external circumference is now standing; but that is nearly entire; the edifice therefore presents a fine appearance from the sea, on which side the extreme height from the ground is 101 feet, while on the cast it does not exceed 72. 272 arches, each story, eight of which openings are placed in four projecting breaks, or contreforts, turned diagonally to the axes of the ellipse, and giving to the exterior a marked difference from the amphitheatres which are known to us. Only the external circumference is now standing; but that is nearly entire; the edifice therefore presents a fine appearance from the sea, on which side the extreme height from the ground is 101 feet, while on the cast it does not exceed 72 feet.

Pola possessed also a theatre, but it is now known to us only in the rude sketches of it by Serlio, in his work on architecture, the edifice itself having been destroyed for that of this part of Italy, which were employed to construct the present citadel, upon the same site, in 1636. The other ancient monuments consist of the two temples, originally dedicated one to Rome and Augustus, the other to Diana; and the arch of Sergius. Both temples are placed upon the same line, about 70 feet apart from each other, when interval is now filled up by a range of very ordinary building; but whether they were originally connected, either by a colonnade or otherwise, so as to constitute one general architectural complex, is now beyond question. Of the other ancient buildings in and around the town, the arch of Sergius is known to us, and the fountain known as the Bailer is attributed to him. (This is, however, by some thought to be a later work of the same architect.)

POLAND. The comparatively small portion of the once powerful kingdom of Poland, which now exists, is the ancient Kingdom of Poland, forms an integral part of the Russian empire, is nearly of a quadrangular shape (exclusive of a long narrow tract of which we shall speak presently), and is situated between 50° 45' and 55° 5' N., lat.
and between 17° 30' and 24° 20' E. long. The above-mentioned slip extends on the eastern side from 53° 20' to 55° N. lat. at the southern part this slip is scarcely 20 miles in breadth between the Vistula and Bug, and its mean breadth of the southern quadrilateral portion, from east to west, is above 200 miles, and its length from north to south about the same. The addition of the slip makes the whole length on the east about 360 miles. Its area, according to the former general outline, which Hirschelmann makes it about 50,000, which is the extent of England without Wales. It is bounded on the north by East and West Prussia, on the east and north-east by the Russian provinces of Witjas, Gatchina, and the southern part by Galicia and the republic of Cracow; and on the west by the Prussian provinces of Silesia and Posen.

**Soil and Surface.**—Though Poland is generally considered a perfect level, the surface exhibits considerable diversity, and some districts rise many hundreds feet higher than others. The lowest and most level portion of the kingdom is situated between 51° 30' and 52° 30', where all the rivers run in an eastern or western and south-western direction, and even the Vistula changes its northern into a western course. The northern boundary of Poland runs over the southern declivity of that swell of high ground which must be considered as the southern limit of the plain of the Baltic. The hills begin where the Vistula and others turn towards that sea, and between it and the North Sea, extends eastward, at a varying distance from its shores, to the heights of Waldaï and the source of the Wolga, into the centre of Russia. The most elevated parts of the surface of this tract are usually waterless, and the districts are literally dotted with them. Its mean elevation seems to vary between 300 and 500 feet above the level of the Baltic. Where it approaches the boundary-line of Poland it has been found nearly as high as 420 feet. It traverses the narrow and most northern part of Poland between 53° 40' and 54° 30'. Its northern declivity, towards the Baltic, though gradual, is sufficient to carry off the abundance of water produced by the melting of the snow in spring, and these districts are consequently in a good state of cultivation. Though the soil is sandy, the abundant moisture, by which it is saturated for a great part of the year, imparts to it a moderate degree of fertility, and it produces tolerable crops of rye, barley, and oats. The southern declivity of the swell is still more gentle. The river Bug in its western course is probably more than 300 feet above the sea-level, so that in a distance of more than 30 miles the country hardly descends 150 feet. Hence the rivers in many parts have a sluggish course. Not being able to carry off the great supply of water in spring-time, and a considerable portion of the adjacent lowlands is not only inundated at that period, but several large tracts remain under water for the greatest part of the year. Such countries are very considerable, but the swamps are limited. Such tracts occur especially along the rivers Bug, Naraw, and Bobr; the last-mentioned river falls into the Naraw. These low tracts, when drained, might probably be converted into valuable pasturage. Such swamps are at present only used as pasture-ground for a few months, and are overgrown with shrubs and underwood. The more elevated tracts of this region have a sandy soil, but, when carefully cultivated, some parts give a moderate return; in others the soil is barren, and nearly without vegetation, except in spring, when there is a scanty grass. A large portion of this region is covered with woods; the most common tree is pine. Such is the country north of the Bug and the Naraw.

The most southern districts of Poland, the greater part of the provinces of Cracow and Sandmir, and that portion of Lublin which lies between the rivers Vistula and Wieprz, are hilly, and rise in some places to a considerable elevation. The summit of the Vistula above Sandmir is about 600 feet above the sea-level. At no great distance from the banks of the river the country rises with a steep ascent, and continues rising for some distance, until it attains about 1000 feet above it, which may be considered the mean height of nearly the whole country between the Vistula and Pilica, with the exception of some tracts along the banks of the first-mentioned river. The highest part of this region extends from south-west to north-east, beginning north-west of the town of Cracow, where the small town of Olikusz is built on a hill whose summit is 1240 feet above the sea-level. The yellow stage rises to Kielce, to the east of which town, near the convent of Swieti Krzyz are two high summits, called Leszczyna and Lyonsyogora, which attain an elevation of between 1900 and 2100 feet above the sea-level. The country between these two summits is generally hilly, but there is not less hilly. In the wide valleys of this hilly region the soil, though somewhat sandy, is of excellent quality, and yields good crops of excellent wheat, which is known by the name of Sandorin wheat, and fetches the highest price. On the west of the Vistula the country is level and contains only a few low hills. North 41° 30' N. lat. is the western extremity of that large region of swamps which forms the boundary between the rivers that run to the Baltic and the Vistula, and which extends in a north-north-east direction to the banks of the river Duna, occupying in some places more than a hundred miles in width. A very small portion of it lies west of the river Bug, and is included within Poland, as that river for a large part of its course constitutes the boundary-line between Poland and Russia.

The country which extends from the hilly region to the banks of the rivers Bug and Vistula, where they flow westward, and to the western boundary-line of Poland, may be considered level, as the highest ground, which runs in a south-eastern and north-western direction, hardly rises more than from 200 to 300 feet above the low tracts along the Bug, and from 100 to 200 feet above the Vistula. Some elevated parts of these higher grounds contain large tracts of sand, nearly without vegetation; in other places they are covered with heath, and here and there some swamps occur, but they are not of great extent. The slopes have a more waterless character, and give occasion to good pasturage and scanty. In the vicinity of the rivers fertile tracts are numerous, especially on the low lands along their banks; but in some places these tracts are so low, that the soil is continually under water, and practically forms a large portion of the country. The rivers Vistula and Bug have numerous important affluents, which bring considerable quantities of water to the dry weather. Slight fogs occur in spring and autumn.

**Climate.**—The range of the temperature is above 100 degrees in the course of the year. The summers are generally very hot, the thermometer rising to above 90°, when the southern wind brings the heated air from the steppes of Astrakhan and other parts of Southern Russia; but these winds are not frequent, nor of long duration, and when succeeded by north-western winds, the thermometer in a few hours sinks 10°. The winters are very cold; the thermometer generally descends to 10° below zero, and sometimes, though not every year, to 15° and even 18°. The country is usually frozen and covered with snow for four or five months; the quality of snow is soft and imparts nothing of the swamps, it fertilises the sandy soil and renders it fit for the production of grain and grass. Though the weather in summer is generally steady, there are many rainy days interspersed among the fair weather; these rains invigorate the crops and improve the crops, which very often result from the dry weather. Slight fogs occur in spring and autumn.

**Rivers and Lakes.**—The most considerable are the rivers which flow through the province of Poland to the Baltic, and which have a considerable extent. These rivers are navigable for large river-barges as far as they drain Poland and flow along its boundary-lines. The number of affluents of the Vistula is considerable. It receives from the east the Wieprz and Bug, and latterly the river Pilica, and which are joined at a considerable distance south of the Bug and the Naraw. The last-mentioned rivers are navigable to a considerable distance; the Naraw to the town of Lonza, and the Bug to Terepol, opposite the Russian town of Brzeze Lutsowsk. From the west the Vistula receives the river Lissa, which is only navigable in the lower part of its course, and to no great distance from its mouth. The river Warta, an affluent of the Oder, begins to be navigable above Kolo, and the river Pilica, an affluents of the Vistula, to the town of Brzesc, and which are last-mentioned river forms for the greater part of its course the boundary-line between Poland and Prussia. Lakes are frequent only in some districts. They are most numerous in the north-eastern, and the largest are Zegrze, Sowelustogowa, Duzy, Wierzy, and Narec, but they hardly exceed two miles in length. The largest lake, that of Gplo, which is about 100 miles long, lies on the north-western boundary-line. The larger and wider part of it belongs to Prussia.

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Productions.—Though Poland is not distinguished by fertility, it produces more grain, hemp, flax, and tobacco than are required for its consumption, and it exports these articles to other countries. Wheat is only abundant in the sily southern region; the principal crops are rye, barley, oats, and buckwheat; barley is also raised, but less extensively. Leguminous vegetables are much valued, and their cultivation attended to. Other vegetables and culinary plants are found in the gardens of the nobility, but those of the poor peasant contain only potatoes, cabbages, and carrots. The orchards are much neglected; they consist mostly of cherry-trees, though pears, apples, plums, and walnuts are also cultivated. In some parts of the country, especially in Mazovia, north-west, and the Prussian provinces and the south-west of the state, the🇰🇵 is raised, but rather numerous, and cattle, as well as hedges and tallow, are articles of export. Hogs also are numerous, and bacon to a considerable amount is exported. Sheep and goats are less abundant, though some parts of the country are well adapted for sheep-walks; the wool is coarse, and little of it exported.

As a considerable part of the country is still covered with forests, timber constitutes an important article of export. The forests consist of oak, ash, lime-trees, and birch, but chiefly of pine and fir. Great quantities of timber from the large forests of the province of Plock, especially from the great one which surrounds the town of Ostrółęka, are annually floated down the Parnawa, and thence to the Vistula, thence to Danzig. They consist of about 20,000 trunks of pines and fir, and about 300 of oak. In those parts where the lime-trees are numerous the forests swarms with wild bees, and the excellent honey which is obtained from them is sent by and by to the neighboring countrysides. Bisons are numerous, especially wolves, which annually destroy many sheep. Bears and lynxes have become rather rare, as well as the beaver, ermine, and elk; but deer, foxes, martens, polecats, badgers, and weasels are still very common.

Several metals and minerals are abundant in the hilly region. Silver ore occurs in the province of Cracow, south-west of Kiecle, but the mines are only worked on a small scale, and their produce is disfigured. Iron ore is very abundant, and considerable quantities are got out and smelted in the country about Olszus and Kiecle in Cracow, and about Konskie in Sandomierz, where it is cast and exported in bars. Copper and lead occur, but do not appear to be worked. Calamine and zinc are more abundant. The largest part of the last-mentioned metal, which is imported into England, is brought from the southern districts of Poland. Very good marble is obtained from some hills near Checzin, south-west of Kiecle. Rock-salt is abundant, though less so than in Galicia on the southern side of the Vistula. It is only in modern times that this salt has been worked in two or three places. There is also coal, but it is very much neglected.

Divisions.—The kingdom is Poland divided into eight provinces, which were formerly called way-wisdoms, but by a decree of the emperor of Russia they are now called governments, like the provinces of the Russian empire.

1. Cracow is so called after the ancient capital of Poland, which is now a separate independent republic. However, the greater part of the ancient way-wisdom of Cracow is included in the government of Cracow. It lies between 49° 6' and 51° N. lat., and between 19° and 21° 15' E. long. It is bounded on the north-west by Kalisch, on the north-east by Sandomierz, on the south by Galicia, on the south-west by Kiecle, and on the west by an ancient Silesia. Its area, according to Hassel and Hörschelmann, is 4450 square miles; the population in 1831 was 425,000, and may now be 450,000. The Vistula separates it from Galicia; it is traversed by the Nida, and has in it the sources of the Pilica. It is one of the few Polish provinces that are traversed by a branch of the Carpathian mountains. There are some tracts of excellent land, good pasturage, forests, and valuable minerals, especially iron. It is divided into four districts: Cracow, Ruthenia, the Vicinity of Kiecle, the chief town, is situated in a picturesque country surrounded by high mountains; it has an episcopal palace, four churches, a convent of Grey nuns, an ecclesiastical seminary, and a military college, and, in the neighbourhood, mines of iron, coal, copper, coal, and coal-lead. The population is stated by Hörschelmann (1833) and Cannabich (1836) to be 5000; but Hassel says it was 5000 in 1819, without the garrison. Among the other towns the principal are Pinczow on the Nida, which has 4176 inhabitants. Charles XII of Sweden defeated the Poles and Saxons near this town in 1702. Chenency, with a castle on a lofty hill, and lead and silver mines in the vicinity, has 2500 inhabitants.

2. Sandomierz is situated between 50° 25' and 51° 50' N. lat., and between 19° 50' and 22° E. long. It is bounded on the north-west by Masovia, on the north-east by Plock, on the west by Sandomierz, and on the south-west by Cracow, and on the west by Kalisch. Its area is 3200 square miles, and the population nearly 200,000. The Vistula divides in from Plock, Lubin, and Galicia; the Pilica, from Masovia and Kalisch. The face of the country surrounding the city is crossed by rivers, and there are mountains and forests, with tracts of very rich fertile soil. It is divided into the four circles of Sandomierz, Opaw, Radom, and Poznanski. Radom, the chief town, on the river, has 19,000, Rodomka, a Piarist college, a gymnasium, and 3500 inhabitants. Sandomierz, on the Vistula opposite the mouth of the San, has above 3000 inhabitants. It is a walled town, with six gates, and an ancient castle on a steep rock, which was razed by the Swedes in 1656. There are here a collegium, two small castles, four convents, four churches, a synagogue, and a gymnasium. This town is celebrated in ecclesiastical history for the "Concensus Sandomierenii," drawn up in 1576, by the Dominicans. Calvinism was introduced into the province of Cracow, by the revolution of 1830, and has spread rapidly. It is a district of much importance for the history of Poland, for the confederation of 1702. Opaw, on the Drzewica has an ancient castle and 3500 inhabitants. Opaw on the Opotawa is situated in a fertile and pleasant country, has a cathedral and three other churches, and is a noted market-place. Superb mines of silver occur there, and carry on a considerable trade, particularly in Hungarian wines. Stassow is a well-built walled town on the Czarna, with a suburb. There are three Roman Catholic churches, a Lutheran Church, and a synagogue. It has above 3000 inhabitants, who have manufactures of cloth, woollens, and stockings.

3. Kalisch, which is the most westerly province of the kingdom, lies between 51° and 52° N. lat., and 17° 45' and 18° E. long. It is bounded on the north and west by the grand-duchy of Posen, on the north-east by Masovia, on the south-east by Sandomierz, on the south by Cracow, and on the south-west by Silesia. The area is 6740 square miles, divided into five circles of Kalisch, Petrikau, Konin, Sieradz, and Wielen. Cannabich says that the population in 1831 was 614,994. This government has mountains in the south, and plains and forests in the north. The soil is in part sandy and swampy, but on the whole not unfertile. The principal river is the Warta. Kalisch, the capital, one of the handsomest towns in Poland, is situated between Hassel four says, and Hörschelmann three) arms of the Wrociow, in a marshy valley surrounded with hills. Most of its houses are built of stones, and are broad and well paved, and some of them planted with trees. The population amounts to 15,000, of whom 2500 are Jews. There are two Roman Catholic parish churches, three hospital churches, a Lutheran church, and a synagogue. The town is one of the four college towns of the kingdom, and is the seat of an ecclesiastical bishop. The most remarkable of the churches are the cathedral, dedicated to St. Joseph, and that of St. Nicholas. Among the public institutions are several schools, but the gymnasium and the military school for cadets have been abolished. Woollen cloth and linen are manufactured here, and there are several tanneries. The Swedish general Malleweld was defeated and taken prisoner near this town by Augustus the Strong, elector of Saxony, on the 29th Oct., 1707. Between 1709 and 1710, Kalisch had 24,000 inhabitants. It has seven Roman Catholic churches and a Lutheran church, a gymnasium, a handsome town-hall, and 4276 inhabitants. Konin on the Warta has a great manufactury of woollen cloth, and 3500 inhabitants. Sieradz on the Warta has 2500 inhabitants. Wielen has 3000 inhabitants, who manufacture some woollen cloth. New Czestochowa lies at the foot of the Klareenberg, on which there is a celebrated convent of St. Paul the Hermite, which was formerly fortified and now serves as a depot of weapon stores with heavy artillery, but is now dismantled. This convent possesses a miraculous image of the Virgin Mary, to which 40,000 pilgrims annually resort, with whom the inhabitants carry on a profitable trade in images, arms, and ammunition. The place is about a mile distant from New Czestochowa, with which it is now connected by a new road, and both together have 5000 inhabitants.
4. Lublin. This government and its capital have been already described. [Lublin.]

5. Plock lies between 52° 15' and 53° 30' N. lat., and 18° 45' and 22° 35' E. long. On the south it is bounded by the Bug, which is navigable as far as Wyszogrod. Narew flows through it. In some parts there are tracts of the finest arable land and meadows, in others extensive forests and marshes. It is bounded on the north and west by Prussia, on the east by Augustowo, and on the south by Podlachia and Masovia. The area is variously stated; some writers makes it 7400 square miles, others only 6300 or 6500. It is divided into the six circles of Plock, Pultusk, Lipno, Miawa, Przasnysz, and Ostrouh. The population is 3376. Plock is situated between 51° 30' and 52° 35' N. lat. and 18° 22' and 22° E. long. It is bounded on the north by a lake, on the south by Masovia, on the west by Sandomir, on the south-west by Kalisch, and on the north-west by the grand-duchy of Posen. Its area, according to Hassel and Hirschelmann, is 6760, but Cannabich makes it 7200 square miles. It is divided into six districts. The town lies on both sides of the Vistula, which flows through it, and has, on the whole, a rich fertile soil, which is well cultivated in the neighbourhood of the capital, and it also contains extensive forests. Warsaw is the capital. [Warsaw.] (The population of the following towns is given according to Cannabich. 1836. Hirschelmann, in 1833, makes the population much less, in many instances; but his and his successor's figures have been admitted to in Hassel's work, published in 1821.) Lowicz on the Bug has 6700 inhabitants, an ancient castle, a cathedral, and three other Roman Catholic churches, a gymnasium, four convents, and a seminary for schoolmasters. The inhabitants are partly employed in the manufacture of linen and in bleaching wax. There are two annual horse and cattle fairs, where a great deal of business is done. Sochaczew on the Bug has 2600 inhabitants; Rawa on the Rawka, 3169 inhabitants; and Izbicza, 2620. Wolborka, a new manufacturing town at the confluence of the Wolborka and the Plica, has important manufactures of woollens, cotton, and iron, a considerable trade, and 5000 inhabitants. Aleksandrowo, a newly established manufactury, has 1500 inhabitants. Osokow on the Bug has also manufactures of woollen cloth, and the population is said to be near 8000. Kutow is a flourishing town, with 4000 inhabitants. Its area is about 8400, and 5300 square miles. This province has the Bug running along the east and western frontiers, on the south-west the Vistula, and on the south the Wieprz; on the south-east there are numerous small lakes, and in the interior extensive marshes and swamps. It is a fertile agricultural country, rich in corn, pulse, cattle, honey, and wax; but a considerable portion is still in a very uncultivated state. It is divided into four circles, Siedlce, Lukow, Biala, and Radzyzn. Siedlce, the capital, is a regularly built town, with a considerable palace and a beautiful park, several churches, a gymnasium, and 4429 inhabitants. Sokolow, Wingrow, Lukow, and Wlodawa have each above 3000 inhabitants. Kock on the Wieprz has an elegant town-hall, a beautiful chateau, a palace, and grounds in the English style, and 2000 inhabitants. Biala on the Iza has a fine palace and park, and 3286 inhabitants. Miedzeryze, a well built town on the Iza, has 4349 inhabitants. Bydgoszcz, a port city, of which a description has been already given [Atgusrowo], lies between 52° 40' and 53° 5' N. lat., and 21° 25' and 24° 15' E. long. It is divided into the five circles of Lomza, Augustowo, Seny, Kalwary, and Mariopol. Suwalki, the capital, was founded about 70 years ago; it has handsome buildings broad regular streets, and 3000 inhabitants. Seny, situated on a lake, has 2700 inhabitants. The absolutism, if it be not brutal, is too hard, and the life of the poorer persons. Lomza on the Narew, in a woody country, has a Piarist college, a gymnasium, and 2300 inhabitants. Szczuczyn is a well-built town, with 3100 inhabitants. Wilkowskiz, in a very fruitful corn country, has 3000 inhabitants. Neustadt (Nieswietno) at the confluence of the Schirwind and the Scheschuppe, surrounded by water on three sides, is on the Prussian frontier; it has much trade, and 3250 inhabitants. Kalwary, situated in a fruitful country, has 800 inhabitants.

History.—The history of Poland previous to the introduction of Christianity is involved in darkness. The religious and political institutions of its inhabitants were similar to those of the eastern nations. The differences of dialect and manner which now distinguish the various branches of that race were at that time much less marked than they are at present. Christianity was introduced by the duke Miezyslaw, a.d. 965, after his marriage with a Bohemian princess. This event brought the Polish sovereign into close contact with the German empire, of which he became a member, having acknowledged the supremacy of the emperor, not over Poland, but over some provinces of it. The Polish and German emperors have always assisted in that quality at the diet of Quellinburg, and took part in the wars of the empire. His successor Boleslav Chrobry, or the Brave (a.d. 992-1025), received (a.d. 1000) the royal crown from the emperor Otho III., who came to Poland on his journey from Russia. The latter, on that occasion declared, him king of the Poles and Scianovians. Thus the Emperor acknowledged his sovereignty over that numerous race, which then occupied all north-eastern Germany between the Baltic and the Elbe, and extended in many parts beyond that river. He also recognised his independence of the empire. Boleslav seems to have had in view the establishment of a Slavonian empire, and the Poles and the Russians were made to render the accomplishment of such a scheme improbable. Boleslav not only considerably extended the frontiers of his kingdom, but strengthened it by wise regulations, and particularly by a skilful organization of the military forces. The effects of the fortunate reign of Boleslav were marred by that of his son Miezyslaw II., a weak prince, who was entirely governed by his queen Rixa, a niece of the emperor Otho III. But things grew even worse after the death of Boleslav II., and his son Casimir I. Rixa, to whom the government was entrusted, rendered herself so unpopular that she was obliged to retire with her son to Germany, and Poland was left to the horrors of anarchy, which lasted several years, until the accession of Casimir, better known by the name of Albert, who re-established order. He governed the country with great wisdom, and was succeeded (a.d. 1068) by his son Boleslav III., surnamed the Dauntless, who was a skilful soldier and an affable charmer. He restored the two monarchs of Hungary, Bela and his son Gyas, as well as the duke of Bohemia, to their respective thrones, from which they had been driven by factions. He defeated the infidel Prussians, and when Tzaslaf, grand-duke of Russia, being expelled from his states, came to implore his assistance, he led him triumphantly back to his capital, Kiev. His residence of about a year in that rich town, which from its constant intercourse with Constantinople entered into a traffic with the Russian workshops, was extremely favourable to his habits. The chroniclers say that his constant success and the great wealth which he acquired in his expeditions to Russia, made him overbearing, dissolute, cruel, and rapacious. He afterwards enticed the Pomeranian bishop, a Dalmatian, to come to Cracow, who had renounced all earthly love in order to implore his assistance, he led him triumphantly back to the capital, Kiev.

II. Some early chronicles, according to the supposition that the murder of the bishop and its fatal consequences to Boleslav were the result of a factious opposition to his authority, headed by the principal nobles and clergy; and every injury to the authority of the crown is admired by the chroniclers, confirms such a supposition.

The vacant throne of Poland was occupied (a.d. 1082) by his brother Vladislav Herman, a weak monarch, whose
Poland was reigned by foreign aggression and domestic war. Vladislaw's son, Boleslaw III, or the Wry-mouth, was a great monarch, who rendered his reign illustrious by many events, which gained him the title of Henry V. But the great glory of his reign was the conversion of the idolatrous Pomeranians. The effects of his fortunate reign were however entirely destroyed by his injudicious partition of the country among his four sons, a custom which continued in Poland till the thirteenth century. This partition, by destroying the unity of the kingdom and producing internal wars, was productive of much mischief, and arrested the development of the Polish monarchy, which, without it, might have become a centre of unity for that race and for a Slavonian empire. Poland recovered from this state of weakness under Vladislaw II, surnamed, on account of his short stature, the Pug, who united (a.d. 1295) the disunited provinces, with the exception of Mazovia, which however remained under the sovereignty of the kings of Poland, and Silesia, whose dukes had become beggars to the king of Bohemia. Vladislaw was one of the greatest monarchs that ever governed Poland. He was educated in the school of adversity, having been twice driven from his throne into exile, and it was only on his last restoration that he succeeded in firmly establishing his authority. He excelled in interior administration. By the example of his family, he taught the country to repel foreign aggression, and to curb the licence of the powerful vassals. He was crowned at Cracow, a.d. 1319, and thus restored a solemnity which had fallen into disuse since the death of Boleslaw the Pug. His reign was the most fortunate to the country. Genoa entered into alliance with the Lithuanians, and the Teutonic order, whom Conrad, duke of Mazovia, called, about a.d. 1230, from the Holy Land to oppose the Prussian pagan, and granted them a large tract of land with many castles. These warrior monks, who subdued and partly exterminated the half-savage Prussians, soon became the most dangerous neighbours of Poland. Vladislaw gained a great victory over them in the battle of Pojewe, a.d. 1331. He was on sent years of age; but the most memorable event of his reign is the first diet of Poland, which he assembled at Chczeny a few months before the battle of Pojewe.

The reign of his son Casimir the Great was devoted to the consolidation of the advantages gained by his father. He made great territorial concessions to Bohemia and the Teutonic order for the maintenance of peace, which was necessary to a kingdom that had so long laboured under the evils of war. The improvements which he made were great, and the chroniclers say that he found Poland built of wood and left it built of stone. He indeed rebuilt many ruined cities, and repeopled them with foreign settlers from the distant countries. The chief work of his reign was to make the nobles his friends. His chief care was directed to the protection of agriculture: and the nobles, who were no longer permitted to oppress the peasants at their will, gave him the nickname of the Peasant King. The first code of laws Legislaturae inscribed in Polish was published in Poland, a.d. 1376, by Prince of Vyatichi, and it was during his reign that the Russian principality of Halicz was united with Poland. The good will of the inhabitants was secured by the concession of great privileges, and it remained a Polish province till 1772, when it was taken by Austria, and is now known by the name of Galicia. Casimir's great public qualities were unfortunately accompanied with great laxity of morals. The inhabitants of the country, envied the riches of the Teutonic order, declared themselves objects of the crown of Poland. A war ensued, which was protracted by the incapacity of the king and by the internal discord which agitated Poland and Lithuania. It was terminated, a.d. 1462, by the peace of Tarnopol, which gave to Poland a rich and fertile country with a large population. The acquisition of Danzig proved particularly advantageous to the commerce of Poland. It was also under his reign that the representation of the Polish nobility was authorized by a preliminary resolution, a.d. 1448. It was determined that each district should elect representatives, and that these representatives should deliberate as a distinct body from the senate; henceforward a measure became a law when it obtained the approval of the nobility, and bills originating in the representation or representatives of the nobles, to which also the deputies of the towns were admitted.

The negligence of Casimir permitted the Tartars to make frequent inroads on the borders, and the peace of Mascar

objeect which he accomplished by granting to the nobles, or equestrian order, many privileges, and by a considerable reduction of taxes, a.d. 1371. In consequence of this conciliatory measure, his son, Casimir, a.d. 1384, after his death, queen of Poland, a.d. 1392, and was crowned at Cracow, being then only 15 years of age. The extraordinary beauty of that princess, which was united to the most valuable qualities of womanhood, caused a worship to be raised to Hedwig's memory as an object of national veneration. She married Jagellon, grand-duke of Lithuania, a pagan prince, who was baptised on that occasion, and converted to the Christian religion. [Lithuania.] This was a great event in the history of Poland, and a political movement to William of Austria; to whom she was betrothed from her infant years. But this union effected the conversion of several millions of pagans, and changed a dangerous enemy into a permanent ally, for the accession of Jagellon to the throne of Poland completely united Lithuania with that country. Hedwig died a.d. 1399, but Jagellon, who on his baptism had received the name of Vladislaw, continued on the throne till his death, a.d. 1434. His reign was made glorious by the victory of Grunwald, in which the power of the German knights was crushed by the united forces of Poland and Lithuania, though the advantages of this victory were lost by the irresistible character of the Hussite heresy, which had been admitted to the kingdom. He permitted however the princes of his house to assist the Hussites against the Roman Catholics. Jagellon was succeeded by his son Vladislaw III, a prince eleven years old. He was scarce of age when the Hungarians, threatened by the first efforts of the Ottomans, invited him to their throne. The young monarch defeated the Turks (1443) in several battles, and advanced within six or seven months of Adrianople. The Turks threw down for peace, and it was on terms most advantageous to the Christians. But this treaty was soon shamefully broken at the instigation of the pope: Cardinal Julian Cesarini absolved the king from his oath, and promised him aid from the Italian powers. The young Vladislaw rushed headlong into a new and unjust war; but he was betrayed by the Italians, who, instead of assisting him, transported the Turks across the Hellespont into Europe to oppose him; and he perished at the battle of Varna, in the twenty-first year of his age. The death of the young king plunged Poland into a kind of stupor: the nation could hardly believe the reality of the melancholy news, and numerous reports were spread abroad of his still living as a pilgrim in distant countries. The Polish nobility, moved by their hope of Vladislaw's return having vanished, it was offered to his brother Casimir, grand-duke of Lithuania. Casimir was reluctant to accept the crown of Poland, preferring to govern his hereditary subjects the Lithuanians, whose affairs seemed to him of more importance. The powers of the Polish equestrian order, and were less turbulent subjects than the Poles. However, when the states of Poland threatened to transfer their allegiance to a new sovereign, he accepted their offers, and left Lithuania, for which he preserved to the end of his life a strong predilection. The most important event of his reign was the union of the Prussian provinces with Poland. The union of the towns*, which reigned in Poland from a date anterior to the introduction of Christianity, ended with Casimir's death, 1370. He was succeeded by his nephew Louis, king of Hungary. This monarch, who succeeded to the crown of Anjou, brother to Louis IX. of France, merited the name of Great, which he received from his Hungarian subjects, but he had no right to claim such an appellation from the Poles. Engaged in continual wars with the powers of Italy, and particularly in the affairs of the Lombard League, which he participated in with his brother Andrew, he entirely neglected Poland, which he visited only twice during his reign. But although he paid little attention to that country during his lifetime, he was very anxious to secure the throne to one of his daughters, and

* A traditional or Habsburg history of Poland relates that Moscyscy's age, and became a common peasant and wheelwright, having been in search of the great kings of this house, and who subsequently became a monk in the church of St. Henry, at Krakow; and continued in Silesia till 1675. Piast became afterwards in Poland a legal term applied to a king elected by the masses of the country.
seized an extensive tract of Lithuania. Casimir was a great promoter of learning, and he gave a very superior education to his eldest son, John Albert, and to the other of the celebrated Italian scholar Philip Buonaccorsi, better known under the name of Callimachus Experiens, who sought refuge at the court of Poland from the enmity of Pope Paul II. His eldest son, Vladislav, was called to the throne of Hungary at the age of fifteen, but of a carless and indiscreet disposition. His tutor Callimachus had great influence over him, and advised him to check the overgrown power of the nobles, for which purpose he had drawn up a system of personal legislation, but of which the nobles only rendered the opposition of that class the stronger. Having inconsequently engaged in an expedition against the Wallachians, Albrecht's army was surprised by the enemy and completely defeated. The Turks soon after invaded Poland with a considerable force, but they were almost entirely destroyed by an unusually severe winter. John Albrecht died in 1501, and his brother Alexander, grand-duke of Lithuania, was elected his successor.

His first achievement was the marriage with Helena, daughter of Ivan III, grand-duke of Moscow, and Sophia Paleologus, did not prevent his father-in-law from repeatedly invading the frontiers of Lithuania, and taking possession of the casarts or districts in that country. The Tartars also committed great depredations in the same country, but they were defeated by his favourite, Prince Ginski, a short time before his death, in 1506. The royal power was much weakened under his reign by the extension of the privileges of the nobility to the detriment of the central government. After Alexander's death, his youngest brother Sigismund, duke of Troptau in Silesia, was elected king of Poland, having become by inheritance grand-duke of Lithuania. He fought the battles of both Lithuania and Poland in a very unequal manner. The southern provinces of the kingdom were converted into a desert by the repeated inroads of the Tartars, and even some parts of Lithuania had experienced the disastrous effects of their ravages. The Tartars of Moscovy, who were recently emancipated from their subjection to the Tartars, and had reduced and united with their dominions the principalities of Rezan and Tver, as well as the republics of Novgorod and Pskow, became by these important acquisitions very formidable neighbours to Poland. Though experience proved that the Muscovite armies were inferior to the Polish in courage and military skill, they always sur

proved them in numbers. The resources of the Muscovite army were chiefly in the immense Wii wealth of that country. The influence which Poland exercised over Bohemia and Hungary, and which was increased by Sigismund's marriage, by his intrigues, and particularly by the agency of Ginski, induced the Czar of Moscovy to attack Poland. In 1514 the Muscovites invaded the frontier of Lithuania with an immense force, and took Smolensk. They advanced into Lithuania with an army of 80,000 men, which however, being met by the Lithuanian general, Prince Ostrogski, with a force of 32,000 men, was completely routed at the battle of Orsha. But this brilliant victory was without any result, as the army soon dispersed, without even retaking Smolensk, which remained in the possession of the Muscovites.

These events induced the emperor Maximilian to seek the friendship of Sigismund, whom he invited to a congress at Vienna in 1515. This meeting produced no advantage to Poland, and the league given by the emperor on that occasion to interfere with the Teutonic order and the Muscovites on the behalf of Poland, proved entirely delusive. The matrimonial alliance between an Austrian duke and a Jagellonian princess of Bohemia, which was agreed upon there, in the course of time placed the crowns of Bohemia and Hungary on the head of the Austrian monarchs, a circumstance which greatly increased their power, and destroyed the influence that Poland had possessed over those countries.

After the death of his first queen, Sigismund married Bona, the daughter of John Galeazzo Sforza, last duke of Milan: She was a most beautiful and accomplished princess, but of a very pertinacious and stubborn disposition, which did much mischief by her ambition and intrigues, although she introduced into Poland many Italian refinements, and the Spanish court, which rendered the court of Poland one of the most brilliant and refined in Europe.

The troubles produced by the Reformations and the troubles produced by the Reformation in the Prussian provinces induced Sigismund to repress them by severe measures, which were however taken from political motives, and not from any religious intolerance; for Sigismund on many other occasions had declared himself tolerant towards the doctrines of the Reformation, which under his reign spread over all Poland.* Albert of Brandenburg, grand-master of the Teutonic order, having been

* In an answer to Ekkius, the celebrated antagonist of Luther, who had sent him Henry VIII.'s book against that reformer, he says that he wishes to be king of pots as well as of sheep.
come a convert to Protestantism, the part of Prussia which was still held by the Order was erected into a secular principality of Brandenburg, secure of the duchy of Prussia, and became a liege to the crown of Poland. Thus Poland gave the first example of a diplomatic recognition of a Roman Catholic institution, secularised by the Reformation. Albert's successors continued to recognise the prince of Prussia till the treaty concluded with France which Prussia was declared an independent duchy. This was the origin of the dominion of the Brandenburg family over Prussia.

The duchy of Mazovia was reunited with Poland after the death of the last prince in 1526; and the Wallachians, who attacked Poland in 1530, were defeated with great loss. The affairs of Wallachia requiring the display of a considerable force, the king offered the appointment of the ecclesiastical crown to his brother, Sigismund, at Leopolis in 1539. According to the account of a contemporary historian (Orichovius), 150,000 militia, splendidly armed, assembled at the royal summits. But this numerous force, instead of marching against the common enemy, raised an outcry against the authority of the king, claiming the redress of certain imaginary wrongs, and the extension of their already overgrown privileges. Thus they separated, without producing any effect whatever, and the miserable condition of his enactment was ridiculed by the nickname of the Chicken War.

Sigismund died in 1548, in the 82nd year of his age, with the character of a wise, just, and magnanimous prince, notwithstanding that in the latter years of his reign he had been involved in war, owing to the death of his wife, to whom he was dotingly attached. He was succeeded by his son Sigismund Augustus, who had been elected and crowned during his lifetime, and was only ten years of age. Before his accession to the throne, and even after the death of his first wife, Elizabeth of Austria, he secretly married Barbara Radzivill, widow of Gastold, palatine of Troki, a most beautiful and accomplished lady, and he declared his marriage publicly a few days after he was proclaimed king. This union, although agreeable to the Lithuanians, was strongly opposed by the Poles, who were afraid that it would give the Radzivills and other Lithuanian families undue influence in the councils of the king. A violent opposition, influenced by the queen-mother, was raised in two diets against the king's marriage, who was required to abandon his wife, and the primat Dzierzkowski promised to distribute on the heads of all the nation the sin of perjury which the king would commit by breaking his marriage oath to Barbara. The firmness of the king quelled that factious opposition, and Barbara was crowned, but she died shortly afterwards, not with strong suspicion of poison, as was alleged by her mother. The death of law Bona Sforza.

At the suggestion of his mother, Sigismund Augustus married Catherine of Austria, the widowed duchess of Mantua. This was a very unfortunate marriage for Poland; it was the cause of Sigismund Augustus dying without issue, of Poland suffering from the political and religious differences which during its existence had been elective only in theory, and becoming so in practice.

The most remarkable events of Sigismund Augustus's reign are the acquisition of Livonia, which voluntarily submitted to Poland, in order to save itself from the Muscovite yoke, and the union between Poland and Lithuania, which was effected at the diet of Lublin, 1569. By this arrangement, it was agreed that the deputies and senators of both nations should deliberate in common. The rights of the Polish nobles were extended to those of Lithuania, and the throne of both countries became equally elective; yet the laws, finances, and army remained distinct. This union continued until the final dissolution of Poland.

It was under the reign of Sigismund Augustus that the doctrines of the Reformation acquired a great influence in Poland. The religious and political interests of the Roman clergy were thus lower in the ground of the king, whose intellect and disposition appear to have been very limited. There seems to have been much unsettled by the conflict of religious sentiments. The nation was embittered by religious differences. Both the Roman Catholic and the Protestants wished to place upon the throne a candidate of their own persuasion. The following were the candidates for the vacant throne: Broke Sieniawski, nobleman of the name of Maximillian II.; Henry of Valois, brother of Charles IX. of France; John III., king of Sweden, son of Gustavus Vasa, who was married to a sister of the late king, and sought the crown of Poland rather for himself or for his infant son, than with the intention of ever becoming king of Poland. The popular candidate was the Czar of Muscovy, Ivan Vassiliovich; and among the natives, John Firlej, palatine of Cracow, the chief of the nobles who followed the Reformed or Helvetian confession, aimed at the crown of Poland. The last-named was the person who best promised success. The hopes of Firlej were however destroyed by the jealousy of the Lutheran nobles, headed by the powerful families of Gorka and Zborowski. The diet of convocation, which assembled in January, 1573, adopted a measure which reflects great credit on the prudence of the nation, particularly if we consider the violence of religious parties at that time. It enacted that all the religious sects which at that time divided Poland should enjoy equal rights and equal protection. The union of the Poles, however, was not completed till 1595, when the last union of the Commonwealth of the Confederation of 1573, became the fundamental law of Poland, and was violated only during the melancholy decline of that country. The extraordinary address of the French ambassador Monluc, bishop of Valence, secured the union by receiving the universal feeling against the royal house of France created throughout Poland by the massacre of St. Bartholomew. Monluc gave, in the name of his master, all the guarantees which were needed to the conditions of election, and went to Paris: the nation, and even consented to the demands of the Polish Protestants that favourable conditions should be granted to their co-religionists in France. The solemn embassy which was sent to Paris appears to have been the result of the king's elevation to the throne, gives a favourable idea of the advanced state of civilization at that time in Poland.

Thuanus speaks in the highest terms of the great information of the Polish delegates. Henry, after some hesitation, swore to the conditions of election, and went to Paris: an act which, in itself, is highly praiseworthy, but a few months after his arrival, having learned the death of his brother Charles IX., by which he inherited the throne of France as Henry III., he secretly left Cracow (a.d. 1574), and escaped from his new kingdom. He tried however to retain the crown of Poland, and promised to return to that country as soon as the affairs of France would permit him. As these promises remained for some time empty of effect, they fell into contempt, and he was arrested after Stephen Batthy was elected. He was a very remarkable person, who had risen, by his great merit, from a simple Hungarian noble to the dignity of sovereign prince of Transylvania. This was a most fortunate choice. Batthy defeated, and the king was reduced to the condition of a prince in some districts and in some districts of Lithuania which had been seized by the Muscovites, and invaded their own country. His victorious career was arrested by the intrigues of the Jesuit Posevich, who induced him to make peace with Muscovy, the Czar of which deceived him by a simulated wish of submitting his church to the supremacy of Rome. Batthy was not only a great commander, but a great king, and he established many useful institutions in the country. His death, in 1586, at the moment when he was making great preparations against Muscovy, may be considered as a calamity to Poland, as it destroyed the polite schemes concerted for its future safety, which would probably have been carried into effect. It also opened the field to the quarrels of many powerful nobles, whose factious spirit was restrained by the strong rule of Batthy. Several candidates for the vacant throne presented themselves. Fedor Ivanovich, Czar of Muscovy, who had been of the highest classes; some Lithuanians, was very near being elected. [Fedor Ivanovich.

After the failure of the Czar, two parties divided the electors: one supported Maximilian, archduke of Austria; and the other, headed by Zamolski, one of the most eminent officers of the king of Sweden, and nephew by his mother to Sigismund Augustus. Both candidates were proclaimed kings by their adherents: but Maximilian, being defeated and taken prisoner by Zamolski, was obliged to resign his claim. The choice of Sigismund III. was unfortunate; he was of
attachment to the Roman Catholic religion, in which he had been educated, he was ever ready to sacrifice the interests of his kingdom to those of his church. He thus lost his hereditary dominions, and created a general discontent in Poland by his complete subserviency to the Jesuits and the Jesuits and the Jesuits and the Jesuits.

Sigismund, who succeeded on the 7th of October, 1613, had a better disposition, and was more devoted to the throne. The Polish army, under the command of Chokiewicz and Lubomirski, occupied a fortified camp near the banks of the Dniester, and resisted all the attacks of the enemy. Peace was concluded on the 10th of October, 1613, on the following terms: 35,000 Poles and 40,000 Swedish troops were to be withdrawn from the field of battle; Casimir Adolphus, unable to obtain any success, proposed, on conditions favourable to Poland, a truce of thirty years, during which the dispute about the succession to the Swedish throne should be settled; but Sigismund, seduced by a delusive promise of assistance from Spain, rejected those offers, and was obliged to conclude, in 1629, a truce of six years, on much less advantageous terms.

Sigismund III died in 1632, in the sixty-sixth year of his age. His reign of twenty-five years, with the succession of errors, the immediate effect of which was however in a great degree prevented by the many eminent persons whom Poland produced during his reign; but the seeds of the future calamities of that country were sown by that king. Sigismund had espoused the cause of the Roman Catholic church, he thought more about the conversion of his opponents than about the interests of his country. Protestantism, which was prevalent in many parts of Poland, was introduced by his efforts, and it was not by open oppression, which was rendered impossible by the constitution of the country, but by a cunning system of secret persecution, and by every possible means of seduction.

Several bishops of the Greek church having subscribed to a union with Rome (1598), the opponents of that union, which was supported by the king and the priests, were exposed to much persecution, which scattered the seeds of discontent and future ruin by among the inhabitants of the south-eastern provinces of Poland, and prepared the way for great calamities. Being entirely under the guidance of the Jesuits, the devoted promoters of the interests of Austria, his external policy was constantly subservient to that power, and often at the cost of the interests of Poland. His private character was respectable.

Sigismund's son Vladislav IV, was elected without opposition. He was a man of sense and enlightenment. Immediately after his coronation he made war against the Muscovites, who had invaded the Polish frontiers, and having defeated them, he entered the frontiers of Muscovy, where he occupied several towns. Peace was concluded in 1634, on advantageous terms. Soon after, however, the Turks, which had been commenced by the Turks were repelled, and peace was confirmed; the truce with Sweden was also prolonged for twenty-six years. Poland thus enjoyed a long peace during the reign of Vladislav, who died in 1648, at the very moment when a most dangerous rebellion was breaking out.

Although Vladislav was strongly opposed to religious intolerance, his royal authority was insufficient to check the persecution of the followers of the Eastern church, as the long reign of his father had firmly established the influence of the Jesuits in Poland. The consequences of this unfortunate circumstance were soon manifested in the rebellion of the Cossacks of the Ukraine, which originated principally in acts of religious oppression, committed chiefly through the influence of the Jesuits. The rebellion broke out in the last moments of Vladislav, and raged for many years under his brother and successor John Casimir, until Chmielnicki, the chief of the Cossacks, in 1654, applied for aid to the czar of Muscovy, Alexius, who sent a numerous army to his assistance and another force to attack Lithuania. The situation of Poland was already very critical, but the immediate danger was averted by the death of Casimir, and the intervention of the Swedish army; the Swedes having ascended the throne of Sweden in consequence of Christiana's abdication, John Casimir's ambassador at Stockholm made a protest against his accession to the throne of Poland, and the Swedes refused to make war against him. Charles Gustavus wanted only a pretext for invading Poland, and he was persuaded to do so by Radziejowski, an
influential grandee, who, being unjustly persecuted by the Polish king, became a traitor to his country. The Swedish monarch entered Poland from Pomerania, in 1653, and the adjacent provinces, which were discontented with John Casimir, who had been supported by Radziwill, who marched without opposition upon Warsaw. The Polish king fled to Cracow, and thence to Silesia, and Cracow was soon occupied by the Swedes. A Swedish force having simultaneously entered Lithuania, a great number of its inhabitants were massacred by the Muscovites, Cossacks, and Tartars, who ravaged a large part of their country, sought safety by submitting to the protection of the Swedish monarch. A great part of the army, being defeated, was obliged to retire to the coast. The king proceeded to the point of becoming king of Poland, his military talents and conciliating policy having gained for him universal respect among the Poles, many of whom believed that their country would regain its power under the rule of such a vigorous sovereign. A deputation accordingly requested him to convocate a diet for his own election, but he proudly answered that he did not require an election, being already invested with the right of conquer. This reply destroyed all his interest, and the Poles began to desert him and return to their king. A confederation was organized in order to restore John Casimir to his throne, and all the nation armed in his defence. The Swedes were attacked, and the Poles, with the assistance, concluded a truce with Poland, and invaded the Swedish province of Livonia. Charles Gustavus maintained himself with great courage and skill. He was joined by Ragozi, prince of Transylvania, who invaded Poland with 20,000 men, and, as the forces of the elector of Brandenburg. But these invaders were either destroyed or expelled by the nation, which had unanimously risen against its enemies. The deliverance of the country was principally accomplished by Monmouth, one of the bravest and most skilful generals of his time. Denmark having declared war against Sweden, Charles Gustavus was obliged to return to his country. The elector of Brandenburg made peace with Poland and declared war against the Swedes, and Austria sent an auxiliary force to them, which proved of no use, although it was granted on the most onerous terms.

Finally peace was concluded at Oliva, near Danzig, in 1660, by which John Casimir resigned his claims to the Swedish throne, and things were restored to the same state as before the war. This peace gave Poland the opportunity of vigorously repelling the aggressions of Muscovy, with which hostilities had been renewed in 1658, for the Cossacks of the Ukraine, having perceived that the swim of Muscovy was a more dangerous protector than their legitimate monarch the king of Poland, returned to their duty on receiving ample guarantees for their religious and political liberties. But the treaties were shortly after denounced, in several large provinces, which were invaded, and expelled from the country, and their own frontiers were invaded.

This war, which terminated in 1668, destroyed the advanced power of Muscovy, with which Poland had been long at war. Peace was also concluded in 1667, at Androshov, by which Smolensk and a great part of the Ukraine were left in the hands of the Czar. Both parties were anxious to conclude the peace, being menaced by the Turks, whose aid was called in by Doroshenkko, a Cossack chief, who intended to throw his countrymen from the sovereignty both of Poland and Muscovy, and to place them under the protection of the Ottoman Porte. John Casimir abdicated the throne in 1668, and returned to Poland, where he died at St. German, in 1672. He was personally brave, and not without military talent. He had served with distinction in the Imperial armies during the Thirty Years' war. His disposition was kind and amiable, but easily influenced, owing to which he was governed by his queen and the Jesuits. Before his accession to the throne he had entered the society of the Jesuits, and was afterwards created a cardinal by Peter the Great from his ecclesiastical vows on the death of his brother Vladislaus, whom his widow he married. His reign was one of the most unfortunate periods of Polish history, and the consequences were equally deplorable. Poland lost Smolensk, and a part of the Ukraine, and the great and important districts were also ceded to the elector of Brandenburg, whose independence of Poland was further recognised by the treaty of Veltau, in 1657. The country was depopulated by constant war and pestilence, and emigration to adjoining countries, which was caused by the horrors of war and by religious persecution.

On the death of Casimir there were several candidates for the throne of Poland, but the minor nobility, jealous of the elevation in influence of the Catholic clergy, attached themselves to the king Michael Prince Wisniowietzki, a young man who had no pretensions to this dignity.

The partisans of the other candidates were carried away by the notorious influence of the Catholic clergy, and the king was compelled to accept a crown, the burden of which he was not qualified to support. His reign was disturbed by the factious opposition of the primate, who wished to dethrone him, and who was assisted by many powerful grandees, who had become jealous of the wealth and influence which the country, with an immense army, and the hero John Sobieski was unable, notwithstanding prodigies of valour and his great military skill, to arrest their progress. Peace was concluded in 1672, by which Poland ceded to the Elector of the Ukraine, and consented to the annual payment of 22,000 ducats. King Michael died in 1673, just at the time when the diet had resolved to break the ignominious peace concluded the preceding year. They afterwards declared John Sobieski, who had obtained a brilliant victory over these enemies on the day after the death of Michael, was elected in his stead, notwithstanding the competition of numerous candidates.

Thus somewhat recovered her strength under the rule of that heroic monarch, whose biography requires a separate article. [Sobieski.] The reign of his successor, Augustus II. of Saxony (1690-1733), and of Augustus III. (1733-63), are described in the next volume. The reign of Augustus III., although tranquil in consequence of the torpor into which the nation had fallen from long exhaustion brought upon it by continual disasters from 1648 till 1717, was fraught with the most disastrous consequences. Augustus, who owed his elevation to Russia, fell, through the instrumentality of his favourite minister, Count Brulz, entirely under the influence of the cabinet of St. Petersburg, which was anxious to maintain that influence by the weakness of Poland. The Russian court understood the great lesson that it would never suffer the formation of the smallest confederacy or any attempt at innovation which should be directed against the authority of the king or the republic. It meant that it would never permit any improvement of that constitution which kept the country in a state of continual disorganization.

The condition of Poland was indeed wretched at that period. The constantly increasing power of the equestrian order rendered government impossible, and the law was bravely impudently many powerful nobles, who, although legally on the same footing as the poorest nobility, were as powerful as independent sovereigns. A preposterous system had been established by which every noble was destined to become a grandee, and to be educated at the Jesuits, so that he might be brought to the nation, that it remained satisfied with its condition, imagining itself to be free, while in fact it was governed by foreign influence. This state of things did not receive its final reforming until the year 1791, when the constitution, which was the cause of all the misfortunes of the nation; but opinions were divided as to the means of attaining this object. The majority of the nobles, headed by the Potecki and Radziwill, wished to maintain all the privileges of their order, and were strongly attached to the Saxon dynasty, which was favourable to their opinions. This Saxon or court party was opposed by the Czartoryski, who, perceiving that a liberty which was the result of a long struggle must be well protected, was only an idle name, wished to establish a strong government as the only means of raising the country from its deplorable condition.

Prince Michael Czartoryski and his brother Augustus, who were descended from a collateral branch of the Jagellonian dynasty, possessed at that time immense wealth and great influence. Both of them also possessed great abilities and activity. They undertook to change the republican constitution of Poland into a well-organised monarchy, which, as was the case with the other, was the result of the royal decree on the humiliating position into which she had fallen through her feeble government. For the attainment of that object they had to struggle against the prejudices of the old nobility and the Roman Emperors. Moscow, despising her ancient magnificence, was now object of steady view, they encouraged science and literature, and raised to a certain degree of consideration families of little note, and raised others which had been reduced to adverse circumstances. They also sought out and p-
tronised men of superior talent, and such as by their writings exerted an influence on public opinion, by which means they powerfully contributed to the restoration of literature in Poland.

In the manner they were preparing the nation for a change in the constitution, which however could not actually be effected without force. They endeavoured therefore to gain the favour of the court of St. Petersburg, believing that the venal and incompetent ministry which then governed Russia, might be made useful to achieve a mission useful to Poland. This project was also much encouraged by the English minister in Poland, Sir Hanbury Williams, who endeavoured to counterbalance the interest of France, which, by supplying a nation in peril and for a time promised the Czartoryski the assistance of England and Russia. If the same spirit which presided over the councils of Russia under Elizabeth had continued to govern that country, the project of the Czartoryski might have been successful; but the accession of Catherine II. entirely changed the state of affairs. The projects of the Czartoryski, becoming known, created a great sensation even before the death of Augustus III. A Russian force having entered Poland to support the election of Stanislas Poniatowski, the lover of Catherine and a relation of the Czartoryski, they availed themselves of the assistance of that force, in order to compel the Diet of Convocation to adopt several laws by which the constitution of Poland was broken. Yet, it was understood that no single member was considerably limited, the executive authority of the crown strengthened, and the excessive privileges of the nobles were restricted. Their project of abolished the appeals to foreign ambassadors, and the proposition of electing the king by deputies chosen for that purpose was also defeated. The same diet declared that the confederation continued to exist, which prevented future diets, as long as it was not dissolved by the veto. Thus the Czartoryski accomplished, although by violent and illegal means, a most salutary revolution. The same preponderance which brought about those reforms, effected the election of Poniatowski in 1764, and the death of his coronation. The number of Polish reforms was further augmented, and introduced other important improvements, particularly in the financial department.

Russia soon perceived how dangerous to its influence in Poland were the reforms which strengthened the government of that country, and it gave its support to the opposition, which was composed of many patriotic individuals, and was too blind to see the advantages of those reforms, being afraid lest they might conduct to a despotic government. The king of Prussia, Frederick II., was in some respect a pretext of the veto. The same power, under the pretext of defending the rights of the anti-Roman Catholic confessions, created division all over the country, and finally, in the year 1793, and the year 1795, the country was divided in two parts. It was divided in two parts. It was divided in two parts. The crowns of the Polish constitution, all Christian confessions to equal rights, passed several others of a different character, which tended to weaken the government, and the acceptance of a Russian guarantee decided the question.

In order to save the country from foreign influence, a confederation was organised at Bar, a little town in Podolia, by the patriotic bishop of Kamieniec, Adam Krasinski. He supported and without any regular troops, it struggled for several years against the forces of Russia, until it fell by exhaustion. The Turks, who had taken up arms in favour of Poland, after having represented in vain to the cabinets of Europe the danger of Russian predominance in Poland, were themselves defeated by the national uniformity which was planned by Frederic II. of Prussia, took place in 1772. By this partition Poland lost, of the 13,500 square miles (15 to a degree) of its territory, 3925 square miles, which comprised its best provinces, and were unequally divided between Russia, Prussia, and Austria. The spoiling parties called a diet to sanction this iniquitous transaction, and imposed on the country a permanent council, which deprived the king Poniatowski even of the shadow of authority. This great catastrophe, and the prospect of losing its heavy loss by internal improvements. An excellent system of public education was introduced, and literature was encouraged; industry was reanimated, and every kind of improvement rapidly advanced, through the exertions of many Russian governors and of the king himself, who earnestly strove to ameliorate the condition of the country. The chancellor, Adam Zamoyski, an enlightened and patriotic nobleman, prepared a new code, which removed many abuses and partly emancipated the peasants. The code was rejected by the diet of 1750, but an improved public opinion produced in a few years a general wish for a reform in the constitution of the country. The diet which assembled in 1764, having declared itself permanent, continued till 1792, when it was the 2nd of Adam, proclaimed a new constitution, which abolished the veto, made the throne hereditary in the Saxon family, which was to succeed after the demise of Poniatowski, the reigning king, and introduced at the same time the necessity of further reforms by enacting that there should be a revision of the constitution after the lapse of twenty years. But a fatal error was committed in neglecting to ordain the country incapable of proposing the new constitution from the aggression of its enemies. Russia, which had guaranteed the former state of things in Poland, excited a party composed of a few fastidious nobles, who, assisted by her troops, formed a confederation and a jargon to overturn the new constitution. The king, instead of marching against his enemies, betrayed the cause entrusted to his defence, and, instead of opposing the advance of the Russians, as he had most solemnly promised to do, and ordering a general levy, or arriere ban, he paralysed by his orders all measures of defence, and soon became a party to the infamous confederation of Targovitza. On the other side, the king of Prussia, who had encouraged the patriots to amend the Russian constitution, found himself abandoned. The consequence of all this was a second partition of the Polish territory in 1793, by which Prussia took 1061 square miles (15 to a degree), Russia 4553, and Poland retained only 5'16. The remaining part of Poland was subjected to every kind of vexation from the conduct of her enemies, who, encouraged by the presence of Russian troops, persecuted the patriots in every possible manner, and the chief persons among them were obliged to seek refuge abroad.

The spirit of patriotism was however not quelled by these circumstances. An extensive conspiracy was organized, and insurrections broke out in several parts of Poland. In 1794 Kosciusko arrived at Cracow, and, having assembled a force of several thousand, received the benefit of the superior number of Russian regular troops. The inhabitants of Warsaw, which was occupied by a strong Russian army, rose against their oppressors, and expelled them after a bloody contest. They did the same. The known individuals were convicted of high treason and executed, but the king was treated with respect. The Poles fought with the utmost bravery, but their courage and patriotism proved unavailing against the overwhelming numbers of Russia and Prussia. In 1795, Kosciusko died at Warsaw, and after the battle of Maciejowice, and Praga, the suburb of Warsaw, was carried by storm by Suvoroff, and all the inhabitants were massacred. Warsaw capitulated, and the remainder of Poland was annexed to the Russian Empire.

Thus Poland was erased from the list of independent states; but the national spirit, which had for centuries withstood the most adverse circumstances and maintained the existence of the Polish state to the very last breath of its constitution, received a new impulse and became more energetic through the severity of the national misfortune. The preservation of nationality against foreign domination was the principal care of those patriots who remained in the country, whilst others raised the national banner in the French armies. On the proposal of General Dombrowski, Polish legions amounting to several thousands of men were formed by the French Directory. This force preserved its own spirit, in addition to the emigrant army, which was increasing in numbers and was supplied with fresh arrivals from Poland, as well as by the prisoners of the Austrian troops that were levied in the Polish provinces. These legions were in the pay of the Italian republic, but the large sums of money for their support were frequently collected and transmitted from Poland. The extraordinary success of the French armies maintained among the Polish Legion a hope that their services would be amply rewarded by the assistance of that power in restoring the independence of their country; but treaties were concluded with the powers which had dismembered Poland, without any regard to the interest of that country. A great number of these troops were sent by the French to Austria, and the number of combatants hence few returned. Some of their soldiers went back to their homes after the peace of Lunville, whilst a considerable number continued in the French army. The fate of the dismembered provinces differed according to the government of the
The Prussian part was well treated in some respects, and the high prices of corn in England gave a great impulse to their agriculture. The state of the peasants was alleviated, and several improvements were introduced for their life, but taxes were more than counterbalanced by a decided tendency to establish Germanism on the ruin of everything that was national. The Austrian government was not more favourable to the nationality of its Polish subjects; it introduced some fiscal reforms, but exacted the Poles by heavy taxes and levies of soldiers in its long wars with France. The Russian part may be considered as having been in some respects the most favoured of all. There were indeed no general improvements, except that for some time agriculture was prosperous owing to the exports of corn to England. But the national language was preserved in all official transactions, and an excellent system of public education, which was carried on in the same language, was introduced by the university of Vilna under the superintendence of its curator Prince Adam Czartoryski, who, supported by the friendship of the emperor Alexander, whose minister he had become, preserved with his sanction the nationality of Poland in the Russian provinces, where the ancient laws relating to civil affairs were also retained. Alexander seemed to entertain for some time an idea of restoring Poland and becoming its king.

The French arms against Prussia in 1806 reanimated the hope of the Poles to see their country restored. As soon as the French entered the Polish territory, the inhabitants rose in their favour, and organising themselves, they formed a force with which, rapidly, immediately joined the French in combating the enemy. Yet Napoleon, after his success against the Russians, stopped at the banks of the Niemen, and concluded at Tilsit a peace with Russia. The Polish territory which had been taken by the French was restored by the Austrian government, and the sovereignty of the duchy of Warsaw, with the exception of the province of Bialystok, containing about 180,000 inhabitants, which was given to Russia. A representative called the Diet of Warsaw offered a league to the sovereign state of Saxony, and the sovereignty declared hereditary in the house of Saxony. The new state, comprehending 1850 square miles (15 to a degree) and 2,200,000 inhabitants, was obliged to maintain an army proportioned to its population, and of which a considerable part was sent to Spain. In 1809 the Austrians invaded the duchy and occupied Warsaw, which the French forces were obliged to evacuate after an unequal combat; but having driven the Austrian army, their numbers were quickly swelled, so that their insignificant force soon became a considerable army, and compelled the Austrians to evacuate the duchy of Warsaw, and also a large part of the Polish territory which they held, which increased the population of the state between 1809 and 1812 to 2,000,000 inhabitants, and 3,780,000 inhabitants. The treaty of Vienna arrested the career of the Poles, and only a part of Austrian Poland was united with the duchy of Warsaw. The campaign of 1813 seemed destined to realize the event, and they made the greatest exertions to contribute to its success. Eighty thousand men marched under Poniatowski and Dombrowski with the French army. But Napoleon damped their hopes at the very beginning by refusing to the Polish deputation to declare at once the restoration of Poland; and he committed a great error in not leaving the Polish army to occupy all the antient territory of Poland, a great part of which was in the occupation of the Russians, and the Poles having been beaten by the Austrian army during the siege of Warsaw, one of the inhabitants, was given to Prussia under the title of the duchy of Pozen. The salt-mines of Vieiluck and some districts were given to Austria. Cracow with a territory of 400 English square miles, and about 120,000 inhabitants, was placed into a republic; and the remainder was divided among the kingdom of Poland, and united to Russia under one sovereign. The new kingdom received a representative constitution, which guaranteed security of person and property in the strictest sense, the liberty of the press, the responsibility of ministers, the independence of the judges; the use of the national language; and a national military force. The representative body was composed of two chambers, senators and deputies; the former of them were nominated by the king, the latter elected by the free inhabitants, and the elections were very unfavourable to that of the deputies, which was 138. All the antient Polish provinces which remained under the dominion of the three dismembering powers were promised by the same congress to the representatives of Vienna for a representation and national institutions conformable to the nature of the government under which they remained.

Such a liberal constitution granted to a kingdom with 4,000,000 of inhabitants, whose sovereign was monarch who had given over many years to an absolute servitude, and still in many little points was an absolute monarch. It could not be expected that such a constitution should be faithfully maintained; and it was not. The hopes raised by the emperor Alexander, that the Polish provinces incorporated with Russia should be united with the new kingdom, were soon dissipated, and discontent began to spread among all the Polish population. The country, it is true, began to make rapid progress in agriculture, and industry was greatly increased; but the despotic power given to the grand-duke Constantine, brother of the emperor Alexander, who was commander-in-chief of the army, and which manifested itself in the most capricious acts of wanton oppression, irritated the army as well as the inhabitants. The inhabitants, who were not accustomed to any kind of representation, were obliged to pay the price of the corruption of the palace, which was organised by Prince Adam Czartoryski in a manner favourable to the conservation of the national language and literature. The Russian senator Novossiloff, to whom the government of the Russo-Polish province was entrusted, established a most vexatious system of espionage over the university of Vilna and the schools dependent upon it. Many young men who had formed a society for promoting literature and moral improvement, were imprisoned, and their laws introduced. This was partially removed by the congress of Vienna to maintain the Polish nationality in the provinces incorporated with Russia, the acts of government evinced a systematic hostility to all that was national. This was also the result of an act passed to oblige the Polish population to receive education, which was organised by Prince Adam Czartoryski in a manner favourable to the conservation of the national language and literature. The Russian senator Novossiloff, to whom the government of the Russo-Polish province was entrusted, established a most vexatious system of espionage over the university of Vilna and the schools dependent upon it. Many young men who had formed a society for promoting literature and moral improvement, were imprisoned, and their laws introduced. This was partially removed by the congress of Vienna to maintain the Polish nationality in the provinces incorporated with Russia, the acts of government evinced a systematic hostility to all that was national. This was also the result of an act passed to oblige the Polish population to receive education, which was organised by Prince Adam Czartoryski in a manner favourable to the conservation of the national language and literature. The Russian senator Novossiloff, to whom the government of the Russo-Polish province was entrusted, established a most vexatious system of espionage over the university of Vilna and the schools dependent upon it. Many young men who had formed a society for promoting literature and moral improvement, were imprisoned, and their laws introduced. This was partially removed by the congress of Vienna to maintain the Polish nationality in the provinces incorporated with Russia, the acts of government evinced a systematic hostility to all that was national. This was also the result of an act passed to oblige the Polish population to receive education, which was organised by Prince Adam Czartoryski in a manner favourable to the conservation of the national language and literature. The Russian senator Novossiloff, to whom the government of the Russo-Polish province was entrusted, established a most vexatious system of espionage over the university of Vilna and the schools dependent upon it. Many young men who had formed a society for promoting literature and moral improvement, were imprisoned, and their laws introduced. This was partially removed by the congress of Vienna to maintain the Polish nationality in the provinces incorporated with Russia, the acts of government evinced a systematic hostility to all that was national.
Pillage or wanton bloodshed. A provisional government was organised from among the members of the supreme administration, with the addition of some popular persons, and Chlopicki, a veteran general of high military reputation, General Dwernicki, was appointed commander-in-chief of the army. The new government acted in the name of the emperor Nicholas as king of Poland, and the grand-duke Constantine remained as governor of the province, which was summoned to Warsaw from different places. The army having assembled and declared for the Revolution, the grand-duke as its commander, by an order of the day, transferred its authority to the national government, a fact which was communicated to the Polish king and government. The grand-duke did not break its oath of allegiance to the emperor of Russia as king of Poland, even in combating against his armies.

The provisional government made an agreement with the grand-duke by which he was allowed to retire from the country with about 8000 Russian troops and twenty-four cannon. This concession, obtained by Constantine's appeal to the generosity of the Polish nation, was a fatal error; by disarming these troops and retaining the grand-duke as a hostage, not only material advantages might have been gained, but a negotiation with the emperor Nicholas would have been facilitated. Chlopicki proclaimed himself dictator of a measure which was generally approved, as tending to preserve the status quo and the existing international order; and the extraordinary military force accorded by the international commerce was employed by him only in fruitless negotiations with the Russian emperor. Had he immediately marched on Lithuania, the Russian army would have been isolated, and this force would immediately have joined the Poles, which would have more than doubled the number of regular troops, besides effecting a general insurrection in that country. Thus while the Poles lost the most precious time in inactivity, the Russians had time to concentrate their troops, and the Polish deputation sent to Petersburg obtained from the emperor no other conditions than absolute submission. Chlopicki, after having brought the country into such a critical position, resolved the discussion of its terms. He proposed to the emperor, unadvisedly, to commit himself to a promise to assist in the preservation of the Polish government, that is, to engage in a war against the Russians, and that the Polish commander-in-chief was shaken, if not entirely destroyed. The troops sent to Lithuania at first obtained great advantages, and would probably have restored the cause of the Poles if not for the feebleness and incapacity of General Giegiud, their commander. A great part was obliged to enter the Prussian territory, where they were disarmed and kept as prisoners; and another part, under the general-in-chief, after having effected an almost miraculous retreat of several hundreds of miles, constantly surrounded by the enemy.

Polish affairs assumed a melancholy appearance after the battle of Ostrolenkä. The want of ammunition and a want of food, owing to an entire absence of communication with the army, was a cause of great distress. This was chiefly caused by the Prussian government, which did not permit the slightest assistance to the Poles to cross the frontier. The Russians, on the contrary, were allowed to have their magazines on the Prussian territory, and always found a friendly asylum whenever they were obliged to retreat there, while the Poles in such cases were invariably disarmed and retained prisoners.

The Russian commander-in-chief Diebitz, died suddenly on the 9th of June, and was succeeded by Paskevich, who had distinguished himself in Asia against the Persians and the Turks. Paskevich resolved to cross the Vistula, and he accomplished his plan by marching near the Prussian frontier, and paralyzing the Prussians by the threat of an immediate attack on the bridges by which he effected his passage were prepared. The Polish generals committed several faults, by which the Russians escaped from imminent danger, and their army forced them back to the left side of the Vistula. Dwernicki, who remained under the fatal delusion that the affairs of Poland would be settled by diplomacy, continued to avoid a battle, and the government deprived him of the supreme command. The general excitement produced among the population of Warsaw by the indecisive conduct of those in power, caused a riot on the night of the 15th of August, during which the forces were worried, and 35 individuals, chiefly spies of the Russian government, and some traitors, among others, were murdered.

The government, feeling its weakness, resigned its authority, and General Krukowski, who is considered to have harnessed the troubles of the 15th of August, succeeded through his intrigues in being chosen president of the government. The town being in want of food, a considerable force was despatched to collect provisions in the provinces on the right bank of the Vistula, and only 30,000 men were left for the protection of Warsaw. The Russians, for fear that the forces sent for them could not reach Warsaw in time, which being attacked on the 6th of September by the Russians, was surrendered to them by Krukowski on the 8th. The army, following the orders of the committee, retired, and many leading persons, retired on the right bank of the Vistula in order to thence towards the frontiers of Prussia, which they were obliged to enter on the 8th of October, whilst another part of the army was compelled, on the 17th of September, to retire on the Austrian territory. For further particulars, see the
reader may consult La Guerre de Pologne in 1831, by M. Brzozowski, the best work which has hitherto been published on this subject.

The Polish people displayed a memorable struggle, which attracted the attention of all Europe, and which, notwithstanding the disproportionate inequality of forces, lasted from February to October, protracted by the desperate courage of the Poles as well as by many faults committed on both sides. The Polonians, however, were dejected by the council of war of the emperor Nicholas, instead of adopting a system of elevation, as was generally expected, exercised the utmost severity against the Poles, and no quarter was given to them. Many individuals who had taken part in the insurrection were condemned either to the mines of Siberia or sent to serve as soldiers in the Caucasus and other Asiatic provinces. The constitution was formally abrogated, and another was formed, called the Organic Statute, introduced.

The universities of Vilna and Warsaw, as well as many minor schools, were abolished, and the public libraries and museums were carried away to St. Petersburg and other parts of Russia. An amnesty was proclaimed, but with numerous exceptions, and many soldiers who returned in consequence of that amnesty were compelled to serve in the Russian ranks. Several other measures were adopted tending to destroy the nationality of Poland, and a great number of Polish officers were ordered to foreign countries.

Sketch of the Polish Constitution before the first dismemberment of Poland.—The king was elective. As soon as he died, the supreme authority was assumed by the prime minister, who, on the invitation of the diet, issued circulars announcing the vacancy of the throne and summoning the diet of convocation. This diet was always confederated, that is, both the chambers, the senate, and the nuncios, or house of commune, deliberated together, and could not be dissolved until the dissolution of the Polish Diet. It was on that account also called the general conference. It issued all the orders necessary for the maintenance of the public tranquillity and safety, and fixed the day for the election of the new king; it was considered as the supreme court in the name of the king, their functions were suspended during the interregnum; but special tribunals for criminal cases were formed, and their authority continued till the coronation of the new king, who was crowned by the prime minister in presence of the diet.

The diet for the election assembled at Vola, in the vicinity of Warsaw, on a spot enclosed by a wall and a ditch: the senate assembled in a temporary building; the nuncios sat in the open air; the nobles, who were assembled from all parts of the kingdom, were encamped at a little distance from the enclosure. After divine service in the cathedral of Warsaw, the diet assembled, a marshal was chosen in the senate chamber, and one senator then gave his blessing to the senators and nuncios, who joined the nobles of their respective palatines, who were all arrayed in troops, and went down the streets, singing psalms. The senators deliberated on the new king, he was chosen by the diet from the thirtieth to the eighty-fifth year of age; he must be a Catholic, and had only to receive the sanction of the third estate, that is, of the chamber of nuncios. A motion which originated in the chamber of nuncios, or a royal proposition, which was amended in the senate, and was then sent to the king and the senate for their approbation; but the power of the chamber of nuncios at last became so great, that the consent of the king and the senate was never refused. There was always with the king a council of twenty-two nobles, and the whole assembly was frequently called together in order to issue ordinances on points for which the fundamental laws of the country did not provide. These were called senatus consulta. The senators were appointed by the king for life, unless he considered the lower rank to be a higher, as for instance from a castellan to a palatine. The bishops were also nominated by the king. The senate was composed of two archbishops, fifteen bishops, thirty-three palatines, eighty-five castellans, and one senator each from four quarters. The castellans were appointed to the senates of Samogitia, Wielka Pologne, Galicia, and Cracow, Vilna, and Troki, had seats among the palatines. The castellan (not the palatine) of Cracow was the first temporal senator. Forty-nine of the castellans were called minor senators, and twenty-eight were called major senators. The minor senators, while their votes were the same as those of other senators. The number of nuncios was 184, besides those of Prussia, whose number was not definite, and who only deliberated when the affairs of their province were concerned.

The nobles, or the equestrian order, were the ruling class in Poland: all legislative power was in their hands, and none who were not born of noble parentage could be invested with any civil or military office, or promoted to the higher functions in the church. The nobles, who had the power of life and death over the persons on his estates, but this power was abolished in 1764. The house of a noble, as well as of a clergyman, was an asylum. If a foreigner died within the limits of a noble's, or a clergyman's property, he was murdered, unless he was taken in flagrante delicto. If however he did not appear before the tribunal when called, he was declared infamous. The house of a noble, as well as his estates, was free from military quarters. He had the power of life and death over the persons on his estates, but this power was abolished in 1764. The house of a noble, as well as of a clergyman, was an asylum. If a foreigner died within the limits of a noble's or the clergyman's property, he was murdered, unless he was taken in flagrante delicto.

The nuncios were exempted from all taxes. The nobles of ancient descent enjoyed all these privileges: but the newly-created nobles, called scitarbells, could not fill any offices of State, and their rights were only those of commoners. If a foreigner died within the limits of a noble's property, or was, according to the legal expression, natura et possessione: the amount of his property might be very small; and the diet of 1763 abolished even that qualification. It was established under serf's suffrages in that class. A noble lost his pri-
vileges by carrying on a retail trade, but he recovered them by
abandoning the occupation. His privileges were also
forfeited by the commission of certain crimes. Each
nobility or class of the Great Sejm, and the Polish, Russian, or
arriére ban, with a certain number of fol-
lowers, determined on the occasion by the king and his
counsel, and proportionate to the extent of his land .
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had a seat in the senate. The other great officers of state, who had not a seat in the
senate by virtue of their office, were the grand and field
hetmans, or generals of Poland and Lithuania. They kept
their offices for life, unless the field-hetman was advanced
to the dignity of grand-hetman. This made them inde-
pendent of the king, and was very injurious to the royal
authority; for though appointed by the king, he could not
dismiss them. There was also a great number of court
dignities for Poland and Lithuania, as great chamberlain, cup-
bearsers, masters of the stable, &c. Each district had a
number of dignitaries with the same names as those of the
court but their offices were nominal only. They were establish-
ed in those times when the kings in their journeys about the country lived at the ex-
 expense of the inhabitants, and were served by those local
court officers. The starosta (capitaine) were of two kinds:
state starostas with castles and towns, and presided in local courts for
criminal and police affairs; and starosta without jurisdiction, who were only holders of starostees, or crown estates, which were
for the defence of their rights. It was generally
by a few individuals, who met together, and after
having composed the act of confederation, which expressed
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POLAR BEAR. [Bear.]

POLAR SEAS is a term generally used to indicate those parts of the ocean which extend from the polar circles to the poles themselves. As the ocean in these parts is generally encumbered by large fields of ice, and the air is frequently loaded with dense and heavy fogs, the navigation is extremely hazardous, and the dangers which attend the whalers, during the course of two centuries, showed that these seas could be navigated with a certain degree of safety, if the seamen united boldness with care and prudence, and to this experience we owe the great discoveries which have been made in those seas during the last twenty-five years.

In the middle of the last century, geographers, finding a reason on some imaginary law of equipoise, were of opinion that a continent of great extent must surround the southern pole; and they supposed that what at present is called Australia was the northern portion of that continent. Thus it happened that the celebrated Captain Cook in his second voyage (1772, 1774). That bold, experienced, and cautious seaman sailed as far as circumstances permitted him along the fields of ice which encumbered the southern pole to a distance of more than 89°, but he did not fall in with an island of any extent, though he frequently passed south of the southern polar circle, and at one place advanced to between 71° and 72° S. lat. Thus the question of a southern continent seemed to be decided. Modern navigators however have discovered several groups of islands in that part of the Southern Polar Sea, which for supposed that none existed, opposite the extreme extremity of America, and the most recent discoveries lead to the conclusion that this part of the ocean contains an island of considerable extent. For an historical account of these discoveries, and a few observations on these countries, see Northern Polar Countries.

That part of the globe which lies within the north polar circle comprehends the most northern portions both of the old and of the new continent; and the term North Polar Sea, or Arctic Ocean, is applied to that part of the seas which is north of the northernmost land, as well as those which are north of America. Both continents terminate towards the north pole, near 76° N. lat., in America and Europe rather south, and in Asia rather north of that parallel, which consequently may be considered as the general boundary of the North Polar Ocean. The North Polar Ocean extends from the Pacific by the narrow Strait of Behring, which divides the most north-western part of America from the north-eastern projection of Asia, and in the narrowest part, between East Cape in Asia and Prince of Wales Cape in America, hardly exceeds 18 miles in width. The sea by which it is united to the Atlantic is as wide as the average width of the last-mentioned ocean, and hence the North Polar Sea is frequently considered as the most northern portion of the Atlantic. The eastern entrance of the Fury and Hecla Strait, whose southern shores constitute the most western portion of the northern coast of the American continent (between 69° and 70° N. lat.) forms 192 miles from the coast of Norway, between 69° and 70° N. lat., or not quite 300 miles more than the town of Halifax in Nova Scotia from Valenlia in Ireland.

That part of the Arctic Polar Sea which borders on the Atlantic contains one of the largest archipelagoes on the globe. The middle of it is occupied by Greenland, which may be considered as the main land of the archipelago. Its northern parts are buried under enormous masses of ice. On the eastern and outer part of it is the extensive group of islands known under the name of Spitzbergen, the small island of Jan Mayen, and Iceland. On the west of Greenland, and divided from it by Davis's Strait and Baffin's Bay, there are considerable numbers of islands of great size. In the present line we are imperfectly acquainted with whose number, according to the latest discoveries, has been increased by two new islands. The most southern of these islands approach so near the northwestern coast of America, as to leave in three places only comparatively narrow but long passages, the narrowest of which is only about 13 miles wide. These straits are that of the Fury and Hecla, which separates Cockburn Island from Melville Peninsula, and was discovered by Captain Parry in 1822. Farther west is Captain Ross's Channel, discovered in 1829 by Captain Parry, which extends between the continent and an island, to which no name was given by the discoverers, because they supposed it to constitute the south-western coast of an island which divided the north-western coast of America, known as Reindeer Island, but which afterwards was named Victoria Island. Still farther west, a newly discovered strait is 10 miles wide at each extremity, but contracts to three miles in the centre. There is deep water in the middle throughout. Its length seems to be about 25 miles. Farther to the west is a much wider strait, which is divided by a very considerable island, known as M'tsvald Straight, in honour of the companion of Mr. Dease. It separates the island called Victoria Land from the northwestern coast of America, and was discovered in 1838 by Dease and Simpson. The most western of these straits, called Dolphin and Union Strait, divides from the American continent the island or islands called Wollaston Land, which were discovered in 1826 by Dr. Richardson. West of this strait, which is about 100 miles wide, no islands are known within the northwestern coast of America. If a line is drawn from the western extremity of the Dolphin and Union Strait (117° W. long.) to the pole, and continued towards the south, it cuts 63° E. long., of Cape Nassau, the most northern extremity of the coast of America, which divides the Artic Polar Sea into two nearly equal parts, may also be considered as the dividing-line between the more and the less navigable portion of that sea. That portion of it which opens towards the Pacific, and is contained within the 117° W. line, is but a narrow strait, and Behring is always so encumbered with immense masses of floating ice, that the boldest navigators have not been able to advance farther north than 70° N. lat., where these immense floating masses of ice are said to be advancing from the coasts of Asia to those of America. No vessels visit this sea for the purpose of taking whales. That portion of the Arctic Polar Sea which opens from the above-mentioned line into the Atlantic is still the principal resort of whalers, and is much more open to navigators. Between Spitzbergen and Greenland vessels have advanced as far as 61° N. lat. British whalers almost every year sail up to the most northerly extremity of Baffin's Bay (77° N. lat.), and Parry in his first voyage sailed in advancing from the north-west to 117° W. long., but here he met an impenetrable barrier of ice. On the other side, the Russian navigator Zhirkow, who surveyed the island of Novaya Zembla in 1836, and discovered Cape Gataway, gained 69° 30' N. lat., and even the eastern to 61° E. long.; but impenetrable masses of ice prevented his advance farther to the east. The very scanty knowledge which we possess respecting those cold regions does not enable us to assign any accurate limits of the area in which the seas in question are situated; and the circumstances which seems to be active in producing this effect is probably the current which sets from south to north through Behring's Strait with great strength, and, passing through the sea, is very perceptible along the eastern coasts of Greenland. It seems however that the whole sea is in motion in the same direction; for Parry, in his fourth and last voyage, when he tried to get to the pole over the ice, was prevented from executing his bold design by the masses of ice which occur north of 81°, on the north of Spitzbergen, being carried by the current southward, so that he lost every day as much as he had gained by moving forwards: in fact he was advancing against the current. If a similar enterprise should ever be again undertaken, the attempt must be made in the opposite direction, where most probably the current would be favourable.

POLARITY signifies, in general, a disposition in a body or in an elementary molecule of a body to place its mathemat-ical axis in some particular direction; frequently also it denotes in a body the existence, either naturally or induced, of two points possessing contrary properties. If from such a body or from such an elementary molecule, we draw a line for a diameter, the symmetrical arran-
The intensity of the force, either of attraction or repulsion, exercised by one of the poles of a magnet on any body is inversely proportional to the square of the distance of such body from that pole; and if a very small compass-needle, supported or suspended in the usual way, be brought near a magnetised bar, it must settle, between those opposing fluids, in the direction of a tangent to some curved line passing through the two poles of the magnet. This is called the magnetic curve, and the direction of the tangent at any given point may be thus investigated:

Let N be the north and S the south pole of a magnet; let P be any given point at which the centre of gravity of a small suspended needle may be placed, and join PN, PS.

Let the attraction of N on P be expressed by \( \frac{1}{PN} \) and be represented by PB; also let the repulsion exercised by S on P be expressed by \( \frac{1}{PS} \) and be represented by PC, in the direction of SP produced. Imagine the parallelogram CB to be formed; then, by mechanics, PC, its diagonal, will represent the resultant of the forces acting on a particle at P; it will therefore be the direction of the needle of a tangent to a curve, and the value of the tangent to this curve at the point P is \( \frac{1}{PS} \).

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of PD, or the equivalent of the force represented by PC when reduced to the direction PQ; and \( \frac{PS}{PN} \) is the value of QD, or of the force PB (= QC) when reduced to the same direction. The sum of these, or \( \frac{PS}{PN} + \frac{PS}{PN} \), is the value of PQ, and represents the whole force of the magnet on the point P in the direction of that line; hence, the equation becomes

\[
PQ = \frac{PS}{PN} \cos \theta + \frac{PS}{PN} \cos \theta.
\]

But, by substitution, \( PQ^2 = PC^2 + QC^2 - 2PC \cdot QC \cdot \cos \theta \); which, by substitution becomes \( 1 = \frac{PS}{PN} + 2 \left( \frac{PS}{PN} \cdot \cos \theta \right) \). Equating these values of PQ and leaving out terms which destroy each other, we have

\[
1 = \frac{PS}{PN} \cos \theta - \frac{PS}{PN} \cos \theta \quad \sin \theta = \sin \theta.
\]

whence \( PS = PN \), and \( \sin \theta : \sin \theta :: PS : PN \).

Now, produce QP till it meets NS, produced, if necessary, in T; and draw SA parallel to NP: then, by trigonometry,

\[
SA : PS :: \sin \text{APS} : \sin \text{APS} \quad \text{sin QPS} = \text{sin QPN};
\]

that is,

\[
SA : PS :: \sin \theta : \sin \theta \quad \text{hence} \; \text{SA} = \text{PS} = PN, \text{which being compounded with the identical proportion PS : PN : PN gives}
\]

\[
SA : PN : PN : PN.
\]

But SA being parallel to PN, SA : PN : ST : NT; therefore ST : NT :: PN : PN.

Thus the ratio of ST to NT is known; and, consequently the position of the tangent PT, from the given position of P. If the poles N and S are unlike, as above supposed, the curves are of the kind called convergent, as NP's; but if the poles are similar, the curves will be divergent, as NP's.

An analogy has long been known to subsist between electricity, galvanism, and magnetism, in respect of the power of imparting power to bodies of the same or opposite sign; each other's effects. Coulomb found, in 1802, that needles of gold, silver, copper, lead, and even wood, when about one-third of an inch long and one-fifth of an inch thick, if suspended between the opposite poles of two strong magnets, presently arranged themselves in lines joining those poles. (Biot, Traité de Physique, tom. iii.) Sir Humphry Davy, Mr. Faraday, and other philosophers, both in this country and abroad, succeeded in exciting magnetism in steel bars by galvanic battery; and gold needles, magnetised by some other means, have been found to acquire polarity, and to be subject, with respect to the horizon and the meridian, to a certain variation and dip, different however from those of a steel bar when magnetised by magnets.

A small piece of steel-wire may be magnetised, or made to acquire polarity in a short time, by merely placing it perpendicularly across the conducting wire of a galvanic battery in action; and it will be found that one end of the steel attracts either the north or south pole of a compass-needle according as it is placed above or below the conducting-wire. But the method employed by M. Ampère to magnetise needles was to twist a wire spirally about a cylinder, and to place the needle into the tube within the spiral; then, connecting the two extremities of the spiral with the poles of a galvanic battery, the needle was found, after a few minutes, to be strongly magnetised. When the spiral was formed from the right hand downwards, to the left, about the axis, that extremity of the needle which was nearest to the negative end of the battery pointed towards the north, and the extremity nearest to the positive end towards the south.

And when the spiral was formed in the contrary direction, the extremity of the needle which was nearest to the negative end of the battery pointed towards the north. By this method a great intensity of magnetic power is produced; the action of the wire upon the needle being repeated as many times as there are revolutions of the spiral about the latter.

In 1820, M. Oersted observed that if a magnetic needle, suspended as usual, be placed under and near the wire connecting the opposite poles of a galvanic battery, the polarity of the needle which is nearest to the negative end of the battery declines westward; and if the needle be placed above the wire, that pole declines eastward. The amount of the deviation depends upon the distance of the wire from the needle; and when the distance is about three-quarters of an inch, it amounts to about 45°. When the wire is in the same horizontal plane as the needle, the latter suffers no deviation; but, if on the western side of the needle, the needle is driven so that the end nearest to the wire becomes depressed; and if on the eastern side, that pole becomes elevated. The hypothesis proposed by Oersted and Ampère to account for the action of the wire on the needle is, that an electric current along the conducting wire produces a galvanic battery from each pole towards the middle; and that these currents, on meeting, turn each other from their rectilinear directions, so that both are compelled to move spirally in opposite directions round the wire. In this way, a current is passed upon the needle, or upon the electric currents supposed to circulate about them, producing changes in the positions of those particles, and thus turning the needle from its place.

It was a discovery of Biot, that if a perpendicular line were let fall from any point in a magnetised needle to the conducting wire of a battery, the electric force acting on that point is perpendicular to the line and to the axis of the wire; and if the magnetic particles in the needle were free to move, the impulses communicated to them by the electrical currents about the wire, it is supposed that these particles would arrange themselves so as to place their axes in planes coincident with those of the electric currents, and of right angles to them. The lines let fall from the extremities on the needle, or upon the electric currents supposed to circulate about them, producing changes in the positions of those particles, and thus turning the needle from its place.

Thus stated, the hypothesis of Ampère and of Biot affords a simple explanation of this phenomenon. The electric current supposed to circulate about the needle produces a magnetic current of the same nature but of opposite direction, in the opposite half-plane of the plane of the needle, and this current is the one which causes an equal and opposite magnetic particle to be placed on the needle, or upon the electric currents supposed to circulate about them, producing changes in the positions of those particles, and thus turning the needle from its place. It was a discovery of Biot, that if a perpendicular line were let fall from any point in a magnetised needle to the conducting wire of a battery, the electric force acting on that point is perpendicular to the line and to the axis of the wire; and if the magnetic particles in the needle were free to move, the impulses communicated to them by the electrical currents about the wire, it is supposed that these particles would arrange themselves so as to place their axes in planes coincident with those of the electric currents, and of right angles to them. The lines let fall from the extremities on the needle, or upon the electric currents supposed to circulate about them, producing changes in the positions of those particles, and thus turning the needle from its place.

POLARIZATION OF LIGHT is the effect of an attraction exercised by the particles of what are called doubly refracting crystals, or of certain reflecting surfaces, upon the particles of light when placed in any position near the conducting wire; the effects of terrestrial magnetism are being now fully realised by means of magnets properly placed for the purpose.

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perpendicular to one of the natural faces of the rhomboid, the angle between the two refracted pencils is equal to $45^\circ 45'$, and the line joining the images of the object is nearly in the direction of the shorter diagonal of that face.

Huygens also observed, that if the two pencils formed by one pencil having been made to fall parallel to each other, on a natural face of the rhomboid of Iceland spar are suffered to fall upon a second rhomboid placed so that two like natural faces are parallel to or in contact with each other, each of the pencils refracted is not divided into two, but in passing through the second rhomboid the ordinarily refracted pencil suffers only the ordinary refraction, and the extraordinarily refracted pencil suffers only the extraordinary refraction. The same thing takes place when, keeping the angle of incidence the same, the crystal is turned about through an angle of $180^\circ$, so that the ends are reversed. But the same faces being in contact, when one of the rhomboids is turned either way so as to be at right angles to its first position, each pencil, after passing through the first rhomboid, though it suffers only one refraction in the second, changes its character; that which was before ordinarily refracted, now becomes extraordinarily refracted, and the other becomes ordinarily refracted. In all other positions of the rhomboids each of the two pencils is divided into two in passing through the second; the angle between them varying according to the position of the rhomboids with respect to each other.

The circumstances mentioned show that the ordinary and extraordinary pencils, in passing through one rhomboid, acquire properties of a like kind with respect to two planes passing through the incident pencil at right angles one to another, and that the angle of refraction on the axis of the crystal perpendicularly to one of the natural faces, the properties of the ordinary pencil have the same relation to this plane which those of the extraordinary pencil have to a plane passing through the incident pencil perpendicularly to the same plane: or the particles in the ordinary refracted wave always vibrate perpendicularly to the first, which is called the principal plane, and those in the extraordinary refracted wave always vibrate perpendicularly to the second plane. Therefore, it is said that the ordinary pencil is polarized in the principal plane of the crystal, and the extraordinary pencil is polarized in a plane perpendicular to the principal plane.

Double refraction is now known to take place in many crystals; and the line in which the ordinary and extraordinary pencils coincide is called the optical axis, or the axis of double refraction. In Iceland spar it nearly coincides with the shorter diagonal of the rhomboid; but in quartz its direction is coincident with the geometrical axis of the prism. All these are called uni-axial crystals, though every line which can be drawn in the prismatic crystals parallel to the geometrical axis has the property of uniting in one the ordinary and extraordinary pencils.

Some crystals have two and others three axes of double refraction; and Dr. Brewster, who discovered the fact (in 1815), found that the two images were united in the bi-axial crystals, and the three in the tri-axial.

If the light of a candle be viewed through a thin and polished plate of tourmaline, whose surfaces are parallel to the geometrical axis of the prism, which, by crystallization the body forms, the plate being made to fall perpendicularly to a line drawn from the candle to the eye, that light will appear equally distinct in every position of the plate. But, the plate being fixed, if the pencil from the candle be made to pass through a second plate, and the second plate be turned round in its own plane, the image of the candle will vary in brightness according to the relative positions of the two plates. If the axes of the plates (lines in them parallel to the geometrical axes of the prisms from which they are cut) be parallel to each other, then the brightness of the image is a maximum, and if the axis of one is at right angles to that of the other, the image vanishes; the light diminishing in intensity from the former position of the axes to the latter in each quadrant of the revolution of the second plate.

In 1810 M. Malus, a Colonel of Engineers in the French service, communicated to the Institute of France the discovery that, when light falling perpendicularly on the surfaces of transparent bodies, solid or fluid, and also from certain opaque bodies, as black marble and ebony, it becomes polarized, like the pencils which are transmitted through a doubly refracting crystal. Thus, if a pencil of light fall upon the surface of a plate of Iceland spar at an angle of $45^\circ 35'$ with a perpendicular to that surface, and the reflected ray be transmitted through a rhomboid of Iceland spar, whether the principal section of the rhomboid be parallel to the plane of reflection (plane of the incident and reflected rays), or whether it be perpendicular to it, the pencil suffers no extraordinary refraction; but in all other positions the pencil is divided into two in passing through the rhomboid, as if it had previously been refracted in a rhomboid of the spar. It may be observed, that the polarization of the light takes place simultaneously at the upper and under surfaces of the glass plate: the pencil of light being incident on the former surface at the angle of incidence, and it is obvious that the angle of incidence at which the pencil falls on the latter, is less than that at which the pencil fell, before refraction, on the upper surface.

When the reflecting surface is water, the light is found to be polarized when the angle of incidence is $52^\circ 45'$; and it is found that when the tangent of the angle of incidence is equal to the refractive index (the quotient which arises on dividing the natural sine of the angle of incidence by that of the angle of refraction) of the glass or transparent medium from whose surface the light is reflected, the whole of the reflected light is polarized; just as the ordinary pencil produced by the first rhomboid of Iceland spar would be if its principal planes were parallel to the plane of reflection, and common light had passed through it instead of being reflected from the medium.

In the undulatory theory of Optics the phenomena of the reflection and refraction of common light may be satisfactorily explained by supposing a wave to diverge spherically everywhere according to the point at which an agitation of the etherial medium has taken place, the transparent substance in which a pencil is refracted being supposed to be uniformly elastic; and, consequently, it may be admitted that in common light the undulations are of a spherical form having the agitated point as a centre. But it is evident that if the molecules of the medium through which the vibrations of light are transmitted were not uniformly elastic, the particles of light will move with different velocities in different directions; and thus the waves will not be spherical.

It was an hypothesis of Huygens that the extraordinary refraction in Iceland spar arose from a precipitation of the light composing the pencil in spheroidal waves; but to M. Fresnel is due the investigation of a general equation for the form of a wave, or, as it is called, the surface of elastici city in that medium. The research is founded on the supposition that the arrangement of the particles in the crystal is such that, while the attractions exercised by those particles on any one of the luminiferous particles in a wave have for their resultant a force which is not in general coincident with the direction of the vibrations of the latter in the wave, there may yet be three lines of direction at right angles to one another, and having a common point of intersection, in each of which, if a particle be displaced by its vibration in the wave, the resultant of the attractions shall be in the same line, and shall act in a direction opposite to that of the displacement. For a demonstration of this property in an elastic medium see the article Liouillet in the 'Encyclopædia Metropolitana,' sect. 996, &c.

Now imagine three rectangular co-ordinate axes $OX, OY, OZ$ to exist in the crystal, and suppose the crystal to be cut in the form of a rectangular parallelopiped, having one of its axes, as $OZ$, coincident with the axis of the crystal (supposed to be uni-axial). Let $OX, OY$ coincide with the plane of the paper, and let the constitution of the crystal be such that the attractive forces of its particles upon the luminiferous ether among them are equal in directions parallel to $OX$ and $OY$, but different in directions parallel to $OZ$.

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M. Fresnel considers that, whatever be the law of the attractions of the particles of crystal, the attraction exercised upon a displaced particle of light must be some function of that displacement; and that, in the direction of the co-ordinate axes, it may be represented by $aX$, $bY$, and $cZ$ respectively; where $a$ and $b$ (forces of elasticity) are constants depending on the positions of $OX$, $OY$, and $OZ$, with respect to the particles of the crystal; the force in $OY$ being equal to that in $OX$, as above, by the nature of the crystal; also $X$, $Y$, and $Z$ are the components, in the directions of the co-ordinate axes, of a displacement or extinct of the vibration of a particle in any direction from $O$. Let this displacement be represented by $D$, and let the line in direction in which the particle vibrates from $O$ make with $OX$, $OY$, $OZ$ the angles $\alpha$, $\beta$, $\gamma$ respectively; then $\mathbf{D} = D \cos \alpha \hat{X} + D \cos \beta \hat{Y} + D \cos \gamma \hat{Z}$. But when $\mathbf{D}$ coincides with $OX$, $\cos \alpha = 1$; when $\mathbf{D}$ coincides with $OY$, $\cos \beta = 1$; and when $\mathbf{D}$ coincides with $OZ$, $\cos \gamma = 1$; consequently, in that case $\mathbf{D} = D \hat{X}$, which represent by $A^2$. Again, when $\mathbf{D}$ coincides with $OY$, we have $\beta = 0$, and both $a$ and $\gamma$ are right angles; consequently then, also, $\mathbf{D} = a \hat{D} \hat{O} \hat{A}$, or $A^2$. Lastly, when $\mathbf{D}$ coincides with $OZ$, we have $\gamma = 0$, and both $\alpha$ and $\beta$ are right angles; consequently then, also, $\mathbf{D} = b \hat{O} \hat{B}$, or $B^2$. Thus $A$, $B$, $C$ may represent the three rectangular co-ordinate axes of the surface of elasticity; and the wave is therefore of a spheroidal form.

If we place upon an incident wave, perpendicular to the paper, fall upon the plane of the axes $OX$, $OY$, $OZ$, making with it an angle equal to $OMN$ (which represent by $\theta$), and cutting it in a line passing through $M$ perpendicular to the paper, that is parallel to $OM$, we have $\mathbf{D} = D \cos \alpha \hat{X} + D \cos \beta \hat{Y} + D \cos \gamma \hat{Z}$; but when $\mathbf{D}$ coincides with $OX$, $\cos \alpha = 1$; when $\mathbf{D}$ coincides with $OY$, $\cos \beta = 1$; and when $\mathbf{D}$ coincides with $OZ$, $\cos \gamma = 1$; consequently, in that case $\mathbf{D} = D \hat{X}$, which represent by $A^2$. Again, when $\mathbf{D}$ coincides with $OY$, we have $\beta = 0$, and both $a$ and $\gamma$ are right angles; consequently then, also, $\mathbf{D} = a \hat{D} \hat{O} \hat{A}$, or $A^2$. Lastly, when $\mathbf{D}$ coincides with $OZ$, we have $\gamma = 0$, and both $\alpha$ and $\beta$ are right angles; consequently then, also, $\mathbf{D} = b \hat{O} \hat{B}$, or $B^2$. Thus $A$, $B$, $C$ may represent the three rectangular co-ordinate axes of the surface of elasticity; and the wave is therefore of a spheroidal form.

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M. Biot, who discovered the class of positive crystals (in which $n'$ is greater than $n$), showed that when $AB$ is made the longer, and $CD$ the shorter axis of the spheroid, the radii $OA$ still represent the velocities of the extraordinary pencil $M$ and $CD$, which becomes the new axis of refraction; a more general rule: Imagines any ellipse, whose axes $c$, $d$, $e$, and $f$ are reciprocals of the refractive indexes in those directions, to be cut by a plane passing through the centre; then at both the greater and least angles the sections will be the lengths of the radii of the ordinary and extraordinary waves, and consequently the velocities with which those waves are propagated in the crystal when light is incident in a direction perpendicular to that section.

Hence it is proved that the ellipse of elasticity admits of two circular sections, which are formed by diametral planes passing through the mean axis of the ellipse, and that these sections are equally inclined to the two other axes. The normals to these sections are the directions of no double refraction, or of the optic axes of the crystal. And both Fresnel and Dr.

Young have shown that if unity be divided by the squares of the two semi-axes of a diametral section of such ellipse, the difference of the quantities will vary with the products of the sines of the angles which the perpendicular to this section makes with the two normals to the circular sections of the ellipsoid.

The effect of polarization of light consists in its particles being made, by the attractions of the molecules of the polarizing medium, to vibrate in lines perpendicular to some plane, is an hypothesis founded on the results of numerous experiments, of which it is unjust to mention only two of the most simple, in addition to the refractions in Iceland spar and the reflections from polished surfaces already noticed. If two plates of tourmaline are placed one on the other in like positions, that is, with their axes parallel to each other, the light of the sun or of a candle will be readily transmitted through them; and if, while the plates are in contact, one be turned round in its own plane, the light will gradually diminish till the axes of the plates are perpendicular to each other, the polarization will then pass through. Now those circumstances indicate that the luminiferous ether can pass freely through such plates only when the vibrations of its particles in them are performed in lines parallel or perpendicular to the axis of the plate, and that the cause of the light being arrested at the second plate, when its axis is perpendicular to that of the first, is the impossibility of the particles, while so vibrating in passing out of that first plate, finding a passage between the molecules of the crystal, once when the latter is placed perpendicularly at a right angle, the light polarized by the mica suffered no change in passing through the spar; but when the spar was placed on the mica, at an angle of 45°, with a vertical or horizontal plane of incidence, the colour of the light, as observed by Brewster therefore gave to these diagonal lines the name of depolarizing axes; and to those in vertical and horizontal directions, the name of neutral axes. When the Iceland spar was inclined to the vertical neutral axis of a plate of mica or tops, in a plane perpendicular to that plate, at such an angle that the polarized light fell on it at an angle of 45°, the image, which was before invisible, reappeared; that is, the light became depolarized. This effect did not take place, however, when the spar was placed in a plane passing through the horizontal neutral axis of the mica; but, on making the trial with the depolarizing axis, it was found that each of these last was accompanied by an additional white image (Brewster, in New Philosophical Instruments, book iv., ch. 4.)

The phenomena first observed by M. Arago in 1811, and called by him circular polarization, consist in the changes of colour undergone by the two images formed when a polarized ray is made to pass at right angles through a plate of rock-crystal cut perpendicularly to the axis of double refraction, and when those images are examined by a doubly refracting prism. On turning this prism half round, the extraordinary image, which at first was red, became successively orange, yellow, green, and violet, and on continuing the revolution of the prism, the tints recurred in the same order. The hypothesis proposed by the discoverer, in order to account for these changes (44°, 57°, 67°, and 81° of the axes emerging from the rock-crystal, are polarized in different planes. Again, if between the glasses at $A$ and $B$ (fig. 4) there be interposed a plate which possesses the property of double refraction, the images red and green become naturally bright, but at times covered by dark rays, and sometimes by complicated rings richly coloured; the arrangement depending on the direction of the pencils to some fixed lines in the interposed plate, which are determined by $A$, the sets of waves emerging from the crystal with different velocities, and their union in passing through it produces a light not polarized, or not in the same planes as before; therefore they again became capable of being reflected, and last, since the positions of the two planes of polarization, as well as the difference in the velocities of the pencils, depend upon the directions of the paths through the crystal; the nature of the light pro-
duced by the union of the two emergent pencils, and conse-
quently its intensity, will vary with the direction in which it
enters the eye after reflection from B. Thus variously
coloured spots and curves will be seen. (See Airy's Math-
Tracts, Optics, Art. 144, &c.)

The theory has been extended by Brewster, Biot, Fresnel, Young, Sir J. Herschel, and others; but it may
be sufficient in this place to have indicated it.

Professor Forbes of Edinburgh has succeeded in polar-
izing radiant heat, both by reflection and refraction; em-
ploying, for the purpose of measuring the intensities, an
instrument of such delicacy as to be capable of indicating
an increment of temperature equal to about 1\,\mu\,° C of a
degree of Fahrenheit thermometer. The Polarized
heat; and since depolarization is a consequence of
double refraction, it follows that the existence of a doubly
refractive property in heat is thus demonstrated. [Undu-
atory Theory Light]

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Pole.

The word polar as applied to a point
means a turning or hinge point, and was applied to the points
at the extremity of the axis of the celestial sphere in
the ancient astronomy. Hence, on the hypothesis of the
earth's rotation, it comes to mean the extremities of
the axis on which the earth turns. From this primary
meaning all the various uses of the word pole have been
developed. When it was found that the mag-
et did not always point to the north pole, but to another
point, it was natural to call that other point the magnetic
pole. Previously to this use of the word, it had already
taken a wider signification, as follows—On looking at the
position of the sun, the shadow cast by his native cities to
the poles, it is obvious; that if the equator, or circle of equal day and night, should
be changed, the axis must also be changed, and the poles of
rotation. Hence any great circle of the sphere is said to have its poles, meaning those
sections, or parts of the sphere which would
become poles of rotation if that circle became the equator.

[SPHERE.]

A term seldom passes through several significations,
however, without meaning it under the widest sense.
The word pole is now used to denote any point
which is of so striking a character as to require a dis-
tinct name. In physics the word is naturalized in mag-
netism, electricity, and optics; insomuch that any tendency
towards a particular point, or even to a particular
direction, is termed polarity. In geometry, the only defi-
nition which can now be given of this term is, that it means
any point which it is wanted to mean. Thus a point con-
ceived to be the Co-ordinate of the earth, to which
when distances measured from the origin are among
the co-ordinates, they are called polar. Again, it is a well
known property of the conic sections, that if all possible
chords in any one section, and a group of
tangents be drawn from the extremities of each chord,
the intersections of all the pairs will lie in one straight line;
the point through which the chords are drawn is called the
de of that straight line.

POLAR STAR

[URSA MINOR.]

POLE

[PERCH.]

POLE

[REGINALD], the celebrated Cardinal, was born
in A.D. 1406, the same year which gave birth to the
emperor Charles V. He was of very illustrious de-
scend on the side of his mother, who was the daughter of
George, duke of Clarence, brother to King Edward IV., and
cousin-german to Elizabeth, queen of Henry VII.

He was VIII. He was a younger
son of Philip, and received an education such as was given to those who
were destined to high stations in the church, being placed
when a child in the Carthusian monastery at Shene, from
whence he was removed to Magdalen College, Oxford, where, as
he had the benefit of the instruction of the celebrated
Linacre. As early as 1515, he was made B.A., admitted
to deacon's orders, and, when only nineteen, was made
dean of Winborne and dean of Exeter.

Pole, after his promotion to a professorship in an
Italian university, visiting Padua for that purpose. He
returned to England in 1525, when he was received by the
king in a manner befitting his rank and eminent attain-
ments. As a professor of the law he had fewer charms for him than the opportunities for seclu-
sion and study which were afforded by the monastery at
Shene, to which he retired. Times were however approach-
ing when it was impossible for a man like Pole to be a mere
spectator from the silent hold of a Carthusian monastery,
nor could he think it right to be a mere spectator, mild and
gentle, humane and pious as he was.

When the king resolved on divorcing his queen and
acting in defiance of ecclesiastical authority, Pole presented
a strenuous opposition, and wrote his famous treatise Pro
Uniate Ecclesiastica. This was a great disappointment to
the king, who withdrew his pension, deprived him of his
privileges, and procured that he should be attainted in
parliament. The king had now entered on that bloody
course in which he persevered for the remainder of his
life. There is little doubt that Pole would have shared
the fate of those of his contemporaries who had also withdrawn himself from England and the reach of the
king. As it was, his elder brother was put to death, and his
mother, the old Countess of Salisbury, was executed, both
on the poorest and weakest occasions.

During the remainder of the reign, and through the
whole reign of Edward VI., Pole lived abroad. In propor-
tion as he was hated by the king, he was cherished by the
people, by whom he was made a cardinal, employed on several
important embassies, and was in fact a principal adviser
of the spiritual affairs of the realm of England, and touching the Reforma-
tion generally. On the death of pope Paul III. in 1549, he
was made a cardinal by the pope, and on his return to
England was created archbishop of Canterbury. When
this, he retired to a convent near Verona, where he con-
tinued till the accession of Mary to the English throne,
when an attempt was made to re-unite the English nation
to the great body of the Western church.

He returned to England, at the very begin-
ing of the reign, coming as legate from the Roman
see, with full power to absolve the nation, and receive it
again into the bosom of the Catholic church. Parliament
supplanted the queen that this resuscitation might take
place, and the re-union was effected. Then began the cruel
meas-
ures for the extirpation of heresy and heretical, which have
made the reign of Mary so famous in the English annals.

The great scandals of the first years of this reign,
the defects of the national Church, which those needless and unjustifiable severities, is one of the points
in his life on which different opinions will be enter-
tained by those who study with attention the history of that period. It is certain that he had great influence in the
councils of that reign, and that he accepted the archbishop-
ric of Canterbury when Cranmer was put to death. At
the same time, the apparent rectitude of his conduct and
the general mildness of his disposition seem to forbid us
to suppose that he would be any party to the dreadful sever-
ties of that period.

Besides the high dignity of primate, he was made chan-
cellar of both the universities, which he visited by his con-
stant embassies. Every man who could have done it, he would have
effect by the entire reversal of the English Church. The Reforma-
tion in England, had the life of the queen been prolonged:
but her reign was short; she died in 1558, and, by a singular
coincidence, Pole himself died about sixteen hours after
her.

Those who wish to enter at large into the history of this
distinguished person, and to see what may be said on both
sides, in regard to his character and conduct in those am-
biguous times, may consult his Life, written by Mr. Philip,
and the Review of the Life, by Dr. Glover Ridley. His por-
trait by Raffele, well known by the engravings of it, gives
a very lively idea of his personal appearance.

POLE

WELL.

POLEMARCH

[ARCHON.]

POLEMO (πολημός), the name of several Greek writers,
who were most important:—

1. Polemo, the philosopher, the son of Philostratus, who
succeeded Xenocrates at the head of the Atalantica about b.c. 315. (Diog. Laert., iv. 16.) He died in b.c.
270, and was succeeded by Crates. (Clinton's Fast. Hell.,
vol. ii., p. 367.)

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2. Polemo, the historian, whose work was
one of the most celebrated teachers of rhetoric in the
beginning of the second century of the Christian era. He
was highly esteemed by Hadrian and Antoninus Pius. He taught at Smyrna, and conferred great benefits upon the town. He died in his fifty-sixth year, and is said to have been buried alive at his own request, because he was unable to endure the pain which he suffered from attacks of the gout.

The Life of Polonius has been written by Philostratus, who mentions several of his works. These however are all lost, with the exception of two funeral orations, supposed to have been spoken in honour of Cynegius and Callimachus, who fell in the battle of Marathon. These orations were first published by Stephanus, 1567, and afterwards by Foussines, 17, Toulouse. His most recent and the best edition is by Orellius, Leipzig, 1819, 8vo. (Fabricii Bibliothecae Graeca, ed. Haires, vol. vi., p. 2; Philostratus, Life of Polonius.)

3. Polonius, surnamed Periegetes (ἡ περιγεγραφή, Strabo, ix., p. 396), was a native of Samos or Sicily (Ath. xiii., p. 234, d), and was made a citizen of Athens. (Suidas, Polo- lemma.) He lived about B.C. 200. A list of his works, which amount to twenty-six in number, and are principally on geographical and historical subjects, is given by Clinton, in the third volume of his 'Fasci Hellenicae,' p. 514. None of these have come down to us entire, but the fragments which are extant have been published under the following title:—'Poloniusi Periegetae Fragmenta collegit, digestit, Notar. etsec. L. Preller. Acc. de Polonius Polyennis Viae et Historiae atque arte Peregrinacion Commentationes,' Lips., 1838, 8vo.

POLEMO (polêmô, the author of a work on physiology which is still extant, of whose life no particulars are known. According to some writers, he was an Athenian, but Sylburgius (in Prefat. ad Aristot., vol. vi.) and Fabriicius (Bibli. Gr., vol. ii., p. 176) consider his style to be too incorrect for a native of that city. From some expressions used by Polonius (for instance, the word ἀναδυομένη, lib. i., cap. 6, p. 197), it seems probable that he was a Christian. As to his date, it is only known that he must have lived before the time of Origen, who quotes him ('Cont. C. lib. i., p. 25). His works (which appears to have suffered much from the ignorance of transcribers) is divided into two books. In the first, which contains twenty-three chapters, after proving the utility of physiology, he lays down the general principles of the science; he speaks of the shape of the head, of the colour of the hair, of the forehead, the eyes, the ears, the nose, the manner of breathing, the sound of the voice, &c.: in the second book, which consists of twenty-seven chapters, he goes on to apply the principles he had before laid down, and describes in a few words the characters of the courageous man, the timid, the impudent, the passionate, the talkative, &c. The greater part of his observations are now lost, but several of his works have been borrowed by J. B. Porta and other more recent writers on the subject of physiology. His work was first published by Camillus Peruscus, with Aelian's 'Varia Historia' and other works, Graces, Rome, 1545, 4to. A Latin translation by Thomas Fish has been published with Morgagni's 'De Natural Homininis' and other works, Venice, 1592, 4to. There is also an edition of the Greek text by Franc. Montecuci, Mutin, 1611, 4to.; and it is inserted by Sylburgius in the sixth vol. of his edition of Aristole's works, Francez, 1587, 4to. The best edition is that by J. F. Franzius, who has inserted it in his 'Scriptores Physiognomiae Veteres,' Altenb., 1780, 8vo, Gr. and Lat., and has added a learned preface.

POLEMO. [PONT.]

POLEMONIAE, a natural order of monopetalous Exogenes, with a trifid stigma, three-celled fruit, and seeds attached to an azile placenta, the embryo lying in the midst of allum men. They are allied to Convolvulaceae, from which their calyx, manifestation, placenta, seeds, and three-celled fruit distinguish them; and also to the Echial alliance, from which their placenta, undivided capular, not extended and stratified, as well as their fruits disjoin them. They consist for the most part of gay-flowered herbaceous plants, natives chiefly of North America. The genera Collomia, Phlox, Lepiscophyn, Gilia, and Polemonium are common to this order. The beauty of the genus as also is Cobena, a climbing plant which grows with great rapidity, and is much used during the summer for covering trellis-work and places which require to be decorated with foliage for a few months. None of the order are of either economical or medicinal value.

POLI, JOSEPH XAVIER, was born at Molletta in the kingdom of Naples, in 1746. He was educated at the university of Padua, under the celebrated Faccoliati: he was also the pupil and friend of Morgagni, and fellow-student with Scarpa, with whom he studied anatomy and medicine. On the termination of his education he entered the army, and his scientific and literary acquirements becoming known to Ferdinand I., he appointed him, in 1776, professor of military geography at Naples. The king also sent him into France, Germany, England, and Holland, to visit the different foreign military academies. During his travels he became acquainted with many eminent scientific men in the countries which he passed through. In England he met with Herschel, Banks, and John Hunter, and he acquired much information from Hunter on comparative anatomy and on the mode of preparing specimens in natural history. While in London he was elected a member of the Royal Society. On his return home he was appointed professor of experimental philosophy at Naples, and he afterwards undertook the office of tutor to the hereditary prince, who became successor to the military academy at Naples. He always highly enjoyed the confidence and favour of the royal family, and he accompanied them to Sicily during the French revolutionary war. He died at Naples in 1825.

Though he successfully cultivated other branches of science and literature, Poli owes his celebrity to his researches in comparative anatomy and natural history: his attention was particularly directed to the study of the testaceous molluscs. While travelling in Italy and abroad, he formed a very fine collection of shells, which was purchased by him by the Neapolitan government. He determined however to be something more than a simple conchologist, and diligently investigated the structure and habits of the animals that inhabit the shells, which had hitherto almost escaped attention. The results of his labours were published in a splendid work denominated 'Testacea urinque Sicilii corumque Historia et Anatomie,' folio, Parma. Two volumes appeared in 1792-5, illustrated with thirty-nine beautiful plates engraved on steel. These contain the multivalved and bivalved testacea, and cost the author twelve years of research. The third volume, embracing the univalves, was delayed by the political troubles with which the country was agitated; and though nearly completed, was not published until 1829, after the death of the author: it contains eighteen plates, making fifty-seven in all. This sumptuous work is as remarkable for the value of the text as the beauty of the plates. The structure, habits, locality, and mode of capture of the different molluscs inhabiting the southern coasts of Italy are accurately described; as well as the form, colour, and other peculiarities of the shells in which they are contained. Poli discovered many new and interesting anatomical and physiological facts, as well as new genera and
POLICE

POLICE is that department of government which has for its object to secure the safety, peace, and convenience of the community. Its primary object then is the prevention of crime. To attain this object, by means of officers posted in every part of the country, the police system is subservient to other purposes, such as the suppression of mendicancy, the preservation of order in great thoroughfares, the removal of obstructions and nuisances, and the enforcing of those local and general laws which relate to the public health and comfort.

In the Anglo-Saxon times the whole community was called upon to aid in protecting life and property; and the spirit of this system, though the system is no longer applicable to the established state of society, still characterises the present department of our institutions. The object of the present notice will be to give some account of the former and present constitution of the police in England.

In the period the counties of each county, chosen by the freeholders in the folk-mote, was the chief officer who was responsible for the conservation of the peace; and in his half-yearly visitations to each hundred in the county, he was to decide whether there was any relaxation in the efficiency of the means for effecting this object. The hundred originally consisted of ten divisions, each containing ten freeholders, mutually pledged to repress delinquencies within their district. All males above the age of twelve were obliged to appear at the sheriff's visitation, to state the visit to which they belonged, and to be sworn to keep the peace. One out of every ten freeholders had precedence of his companions, and the whole were bound to bring delinquents to justice within thirty days on pain of being themselves liable to penalties. The population was thinly scattered; every man was known to his neighbours; and no man could depart from his dwelling without the consent of his fellow-freeholders; and the consent of the sheriff was necessary to enable a man legally to go out of his own county. No man could enter a neighbour-hood without being recognised as a stranger, and probably exciting suspicion; and this suspicion, quickened by the responsibility of the freeholders, the ease of their approach, and early inquests, might give no good account of himself. [HUM AND CRY.]

After the Conquest, the advantages of the system were recognised by several of the Norman kings, particularly by William the Conqueror. Under Edward I. in the early part of his reigns, the former ordered that every freeman should be under pledges, and the latter that views of frank-pledge should be taken in order that none might escape responsibility. But a great innovation was made in the Anglo-Saxon system, when the sheriff, instead of being elected by the freeholders, was appointed directly by the king. He would doubtless be generally a Norman, and therefore indisposed to meet the people in their popular courts; at all events the sheriff's 'tourn' or half-yearly visitation, cause in no long time to be neglected.

When Henry I. instituted the office of justices-itinerant [CONSERVATORS OF THE PEACE], the functions of the sheriff became of still less importance. By the stat. Matr., c. 10, c. 24, passed in the 32 Henry III., the first day after Michaelmas, the justices were dispensed with the attendance of the baronage and clergy at the sheriff's court unless their attendance was specially required; and it also prohibited the justices-itinerant from amercing townships on account of persons above the age of twelve years not having been sworn in pledges for keeping the peace. The law was, moreover, that the sheriff measured the ancient system was greatly impaired; and the new laws which were introduced from time to time for the purpose of repressing crime do not seem to have been very successful. In the first nine years of Edward I. (1285), endeavoured to maintain the spirit of the Anglo-Saxon laws by making the county or hundred responsible in case of a delinquent not being forthcoming, to the extent of the裡数 rather than his own. The justices-itinerant, or rather the justices-throughout the kingdom. This statute also regulated the office of constable, an office which had succeeded the Anglo-Saxon hundred or tything man. [CONSTABLE.] The constables were directed what measures they were to take for preventing crime; but they were not empowered to take great violence, whether of body or goods, after the offenders were set. These measures were made in the first instance, reported directly to the justices-itinerant, or at once to the king or his privy-council; and the supreme executive made provisions accordingly. At the same time the office of constable was made to the vigilance of the inhabitants; and this responsibility extended to individuals in many cases. The following extracts from the Year-Books of the Exchequer are instances of this: 1 Edward I. Sussex: 'Berkeley, through the neglect of the hundred, quartered the inhabitants, their conscribers and constables for negligence in their office; their constables committed to the custody of the sheriff, and the constables of the hundred were held to an account for neglect of the same.' 2 Edward II., Kent: manslaughter (upon a sudden quarrel) committed in the highway of Wrotham—three bystanders arrested because they were present when the accused Robert killed the aforesaid John, and did not take him. And in the reign of Elizabeth the popular vigilance which this system had created led a writer of that day to remark that 'in every Englishman is a serjeant to take the thief, and a sheriff to take the constable; who, with other officials, is the execution of opinion therefor, but hardly shall escape punishment.' Thus the Anglo-Saxon system of mutual protection having fallen to decay, the spirit of vigilance which characterised it for a long time was transferred to the activity of the supreme executive. In process of time great and political, and, it may be added, physical changes have rendered both systems equally incapable of effecting the objects for which they were intended.

Instead of being almost entirely engaged in agriculture, the population is now occupied in an extraordinary diversity of employments and pursuits, many of them occupying and requiring a high degree of intellectual cultivation. Persons so engaged, and the more numerous class who live by manual labour, cannot now follow up the quick and fresh pursuit of felons, at the end the county, from the incompatibility of such a duty with their ordinary pursuits and their daily labour. By a rural population, consisting in a greater proportion of persons having property at stake, and armed for the purpose, the call of the sheriff would be attended to with alacrity, and the execution of the pursuit would probably be far more disagreeable. But now such a pursuit would be quite ineffectual: an offender may have committed a robbery in Lancashire in the evening, and be concealed in the metropolis by the next morning. As a consequence of these various changes, the duties of the police become impoverished.
gradually diminishing, the duties of the constable became much more complicated, and required the whole of the time of those who fulfilled them. The same necessity which had rendered parish or part constables impotent to the various requirements of municipal police, and to the proper discharge of the duties cast upon them by the police acts, had become equally urgent in the case of those whom devoted the duty of keeping the peace and watching over the security of the community, introduced the old parish constable and adapted to a new state of society, it was suffered to remain, with weaker powers, to cope with circumstances which demanded increased vigilance, activity, and intelligence. The office of constable, which, to be competently fulfilled, required a constant devotion to the duties for which it was instituted, remained still a yearly appointment, and one so obvious, that persons were thrust into it who were incapable of executing the duties. Under the most favourable circumstances, and the most lenient and sympathetic of police officers, offered no inducement to exertion; and if the duties were performed with something like energy, by the farmer or small tradesman during his year of office, they were performed at the risk perhaps of injuring their private interests. A power so constituted cannot effectually prevent crime; and it is equally inefficient for the purposes of inquiry and presentment. The parish constable usually acts only when called upon by some private party, and the services of the constable for the benefit of the public have become so extensive as to excite loud complaint, and then the absence of general regulations and rules of discipline renders their services of comparatively little value. In the absence of these, the occasional and spotty appearance of the force, when the need of it is demanded, such a force is useless, and the practice is either to swear in a large number of special constables, or to call in the aid of the military power. The former procedure is found to be expensive, and the deficiency in the necessary degree of discipline, and they are as timid in the performance of their duties as they are unwilling to undertake them. The appearance of a district by military force is an evil which, under present circumstances, would not be less objectionable than the absence of confidence in the old police force is also attested by the existence of upwards of five hundred voluntary associations for the apprehension and prosecution of felons: their funds are expended in the prosecution of criminals, rather than in the prevention of crime. Some of these associations have rules which bind the members, as in the case of horse stealing, to take horse, and join in the pursuit of the thief. Railway Acts bind the companies to maintain a police during the formation of the line. An act was passed in August, 1840 (3 and 4 Vict., c. 50), entitled 'An Act to provide for keeping the peace on canals and navigable rivers.' Private watchmen are also extensively employed in docks and warehouses. The want of uniformity in the constitution of the present rural constabulary, the magistrates of Cheshire in 1829, made the first provincial attempt to improve the administration of police in their county, and they obtained an act by which the rural constabulary was to be organized into a fixed, and direct a paid constabulary. A more successful attempt was made at Barnet by a voluntary association, which at first engaged two officers only to patrol a limited district. The plan was found so advantageous, that it was adopted in a more extensive circle. These isolated examples however render the adjacent unprotected districts in a worse state than they were before. The establishment of a new police force for the metropolis, in 1829, has done more towards effecting the object of employing a trained body of men for all the purposes for which the old constabulary was appointed, than any other circumstance. Viewed at first with suspicion and dislike, from its somewhat military organization, the clamour with which it was assailed has died away, and public opinion is now steadily in its favour. Each parish had formerly managed its own police affairs; and before 1829, the total police force of the metropolis consisted of 737 parishal day officers, 2782 night watch, and 14000 constables. In 1829, in addition, the Bow-street day and night patrol, there were about 4000 men employed in the district stretching from Brentford-bridge on the west to the river Lea on the east, and from Highgate to the Watling-street. The establishment of the police of London being excluded. The management of this large force was of varied and often of conflicting character. The act of parliament creating the new police force (10 Geo. IV., c. 76) enabled the constables of the metropolis to the hands of two commissioners, who devote their whole

time to their duties: they are immediately responsible to the home secretary of state. By the 2 & 3 Vict., c. 47, the metropolitan police district may be extended to any parish or part of the county of Middlesex. By an act, dated August 12, Charing Cross, the first act having limited its operation to a distance of twelve miles. The number of men of each rank serving in the metropolitan police force, in January, 1840, was as follows:—

<table>
<thead>
<tr>
<th>Rank</th>
<th>Number</th>
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<tbody>
<tr>
<td>Inspector</td>
<td>118</td>
</tr>
<tr>
<td>Sergeant</td>
<td>44</td>
</tr>
<tr>
<td>Constable</td>
<td>118 G</td>
</tr>
<tr>
<td>Constable, 1st class</td>
<td>54 D</td>
</tr>
<tr>
<td>Constable, 2nd class</td>
<td>49 F</td>
</tr>
<tr>
<td>Constable, 3rd class</td>
<td>44 G</td>
</tr>
</tbody>
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The sergeants and constables are allowed clothing, and each married man of these two ranks is allowed 40 pounds weight of coals weekly throughout the year; each single man is allowed 40 pounds weight weekly during six winters months, and 20 pounds weekly for the remainder of the year.

The total number of the force is 3486, who are placed in divisions, each division being employed in a distinct district. The first part of the force consists of the watchmen of the day and night; the force is divided into the metropolis and the suburbs. The constable, which, however, is still required to be on duty from day and night. The total disbursement on account of the force, for the year 1839, amounted to £22,933, one-fourth of which is paid by the treasury out of the public revenue, and the other three-fourths by the police officers. In August, 1839, the horse patrol, consisting of 71 mounted men, who are employed within a distance of several miles around London, has been incorporated with the metropolitan police. The Thames police, which has charge of the men and a boat when on duty. The establishment is under the immediate direction of the magistrates of the Thames police-office. The city of London still maintains its own police affairs, which have been placed in the hands of a few functionaries since the establishment of the metropolitan police force. In 1833 the number of persons employed in the several wards of the city was—ordinary watchmen, 500; superintendent watchmen, 25; patrolling watchmen, 91; beatles, 54—total, 710. The number of men on duty in the city at midnight is about 400. The expense of the day police, consisting of about 129 men, amounts to about 9000l. a-year, and is defrayed by the corporation; and the sums levied on the wards for the support of the night-watch average about 4300l. per annum. In addition to the paid watchmen, about 400 ward constables are appointed.

The police of the metropolis and the district within five miles of the metropolis, exclusive of Charing Cross (the exclusive of the city of London) is regulated by the Acts 10 Geo. IV., c. 44, and 2 and 3 Vict., c. 47, and together they form the police code for nearly a seventh part of the population of England and Wales.

The officers are paid on a scale based on several modifications which have been at various times engaged in 200 places to protect the peace when the local force has been found incompetent. In nearly all the boroughs constituted under the Municipal Reform Act (5 & 6 Will. IV., c. 76) a paid police force has been established as nearly as possible on the same footing as the metropolitan police. In the metropolis, when any burglary or serious offence is brought to the knowledge of the police, the superintendent or other officer of the division where the offence has occurred immediately examines the circumstances, or makes a pre cognition and a report upon them and the measures taken in consequence.

A daily report or presentment is made to the commissioners of all the chief occurrences which have taken place during the preceding twenty-four hours in every division of nearly two counties, upon which presentment and instructions are given as any special circumstances may seem to require. These other reports, made at such intervals as to comprehend general results, if it shall appear that in any district there has been an influx of depredators, additional strength is directed upon it, or explanations are required if any marked evil appear to continue without abatement, the existence of such things under the force of the joint and conflicting system is thus described in the Report of a Select Committee of the House of Commons in 1834:— The police was roused into earnest action only on those flagrant cases of violence to private individuals impelled it into exertion; and secu-
polity to persons and property was sought to be obtained, not by the activity and wholesome vigour of a preventive police, which it is the paramount duty of a state to provide, but by resorting from time to time, as an occasional increase of the more violent breaches of the law demanded it, to the highest extent of the police resources, in the hope of checking the more desperate offenders. Not only is the metropolitan police active night and day in preventing depredations and suppressing mendacity, but its attention is directed to giving assistance in case of accidents, reporting nuisances, regulating disturbances, and in keeping a vigilant eye upon the recesses of profligacy and crime. The same services are performed with more or less efficiency in the large towns which have the immediate body of municipal police.

The difficulty of re-organising the rural constabulary has hitherto retarded the general improvement of this force, while the increased vigilance of the towns has rendered such a measure more imperative. In October, 1837, a commission was appointed under the crown to inquire into the best means of establishing an efficient constabulary force in the counties of England and Wales; and the commissioners having taken means to ascertain the opinions of the magistracy in each petty-sectioinal division in the country, it was found that, out of 435 divisions, the magistrates in 123 of them recommended the appointment of a paid rural police; in 13 divisions they recommended such a force, with the salaried in each division to be placed under a com- trol; in 77 divisions the appointment of a patrol of or addi- tional constables was recommended; in 16, the better remuneration of the present constables; in 37 divisions it was considered that further security was necessary; and in 123 divisions no recommendation was made, which was required. The local magistracy are in many instances jeal- ous of the interference of the supreme executive; yet, not- withstanding the balance of opinion is in favour of an alteration. The evils of the present inefficient system are fully described in the Report of the Constabulary Commis- sioners (No. 169, Session 1839). Some of their recom- mendations involve questions of provincial organization, whose consideration is deferred to the committee for reforming the local system of police administration into general operation. In a bill introduced into the House of Commons in 1839, an attempt was made to remove some of these obstacles, and a very clear and detailed account of the plan was printed with the bill (No. 21, Session 1839); but the measure was regarded too elaborate, and introduced so many innovations as to occasion its ultimate rejection.

The following is a brief summary of the principal reasons why the magistrates and rural constabulary (the latter) recom- mend the appointment of a paid police force in lieu of the present parish constables:—The want of organization in any existing force has encouraged crime, and each person living in its limits must be looked upon as a tax on the community than a paid constable. Besides the expenses of judicial establish- ments, a sum exceeding 2,000,000l. is paid annually in England for the repression of crime, while the means for the attainment of this object are imperfect and inefficient. Even the money at present contributed by voluntary associations for self-protection would, it is thought, go far towards obtaining an effective combined force; and there would be also the saving of time to several thousand persons now annually forced into almost useless service as constables, or a saving of money which is paid for substitutes. The extent of the force required is estimated at rather more than 8000 men, and the annual cost at a sum below 450,000l., including expenses of maintenance and charges, the cost per man being 1ld. in the pound on the valuation of real property in Eng- land and Wales in 1815; and it is proposed that one-fourth of the annual cost be defrayed out of the consolidated fund, and the other three-fourths out of the county rate. The average number of commitments in England is upwards of 100,000 annually, which number, it is assumed, represents a total of 40,000 persons living wholly by depredation, to which must be added those who live partially by such means and whose conduct is such as would meet which the force of 8000 men appears to be a moderate estimate. The commissioners recommended that a disposable force of 300 or 400 additional men be kept for extraordinary services. The pay, as proposed, should be based on the principle of the body's, that the pay of those who are directly responsible for its efficiency; and local supervision and control might be made consistent with this arrangement. The success of such a force would of course depend to a great extent upon its being seconded by popular feeling, and, contrary to the opinion of many persons, it would be less likely to infringe upon personal liberty than a body of isolated individuals, as an acquaint- ance with legal duties forms part of the training of a com- bined force, which must in all cases have general rules and regulations. It is recommended that the constabu- lary be established, the commissioners recommended that the men be changed from one district to another in the same manner as the officers of the Excise establishment.

The commissioners have thought proper to take any steps for the general establishment of a trained constabulary force in England and Wales; but in 1839 an act was passed (2 and 3 Victoria, c. 93) enabling the magistrates to appoint such constabulary. The act empowers the magistrates assembled in quarter-sessions to report to the secretary of state the necessity of appointing additional constables, but not in a greater proportion than one consta- ble to each one thousand of the population; the expenses to be charged upon the county-rate in the several divisions in which the force has been appointed. To secure unity of ac- tion and general uniformity, the secretary of state is to frame rules for the regulation of the new force. The men employed in it are not to exercise any other employment, and are not allowed to vote at elections for a member of par- liament. The provisions of this act have been adopted by the following counties:—Northants, Norfolk, Suffolk, Huntingdon, Bucks, Cumberland, Durham, Essex, Gloucester, Hants, Lancashire, Leicestershire, Norfolk, Northamptonshire, Northumberland, Oxford, Suffolk, Warwick, Wilts, Worcester, and Glamorganshire. A Parliamentary Return (No. 363, Session 1840), gives the alternative arrangements in the county of the additional constabulary force in each of the above counties, and the ad- ditional rate in the pound which it will be necessary to levy for its maintenance.

In addition to the two acts above mentioned, the following statutes enable magistrates to obtain any additional police force which may be requisite to ensure the preservation of the peace:—1, The 3 and 4 Wm. IV, c. 90, entitled 'An Act for enabling England to be defended against foreign attack, etc.' 2, The Act 1 and 2 William IV, c. 41 (amended by the 5 and 6 Wm. IV, c. 43), relates to the appointment of special constables, and the title sufficiently explains its object:—'An Act for amending the laws rela- tive to the appointment of special constables, and for the better preservation of the peace.' Under this statute special constables may be sworn in on apprehension of a breach of the peace, and they may be paid out of the county rate. The act also enables the magistrates to obtain the services of the metropolitan police, and provides in like manner for their payment.

POLICY and POLITY. Policy is generally used to signify the line of conduct which the rulers of a nation adopt on particular questions, especially with regard to foreign countries, and according to our opinion of that par- ticular line of conduct we say that it is good or bad policy. Policy has a more extensive application than by synonymous with the principles of government, and this is the sense of the Greek ' politeia' (politeia), from which it is derived. Police, in an extended sense, is that branch of policy which is concerned with the internal economy of the state. In a restricted sense the word police means the pre- ventive administration, distinct from the administration of justice, the object of which, among other things, is the punishment of crimes committed.
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studied at Paris, and took holy orders. He accompanied Cardinal de Bouillon to Rome in 1689, and was employed as a negotiator to settle some differences between France and Spain. He continued in the service of his sovereign, and was sent by Louis XIV. as ambassador to Poland, where, after the death of John Sobieski, in 1696, he contrived to have François Louis de Bourbon, prince of Conti, proclaimed king of Poland by the majority of the electors. But another paper had been sent by the Elector of Saxony, which was at length acknowledged by the whole nation. [Au-

quurrus II]. Louis XIV. being displeased, recalled the Abbé de Polignac, and banished him to his abbacy at Bon-

port, where he employed himself in writing his poem in re-

futation of Lucretius. Being recalled to court after some years, he was appointed by Louis XIV., in 1706, auditor of the rota at Rome, a court which is concerned about ques-


lished an essay on the division of government, the powers of the legislature, and the subject of its authority. The constitution of the Roman republic, the constitution of the British monarchy, and the constitution of the kingdom of France, were the main political topics discussed by political

P. C. No. 1145.
economists are: 1, the definition of wealth; 2, of productive and unproductive labour; 3, on the nature and measures of value; 4, on the rent of land; 5, the wages of labour; 6, the price of goods in terms of machinery; 7, the circulating medium, or currency; 8, the nature and conditions of commerce, or exchange of commodities. Most of these subjects are treated in this work under the heads of Accumulation, Balance of Trade, Wages, Rent, Profit, Exchange, Money, Credit, and Wealth.

History of the Science. — The great nations of antiquity, the Greeks and Romans, had no notion of a monetary system, or one of the kind we understand. They aimed to increase their wealth chiefly by war, by conquering and plundering weaker nations, and appropriating to their own use part of the produce of their industry. They considered handcraft and trade as subsidiary means, and could not be exercised by slaves or freedmen. The Romans, in the earlier ages of the republic, held agriculture in more esteem; but after they had extended their conquests beyond the limits of Latium, the business of agriculture was mainly conducted by slaves. The consequences of this system are well known: agriculture declined, and the people of Rome were obliged to be fed by corn from the provinces. It is evident that in such a state of society there would not be the preoccupation of statesmen with the most important questions of political economy, which are based upon the principles of free labour and competition. It appears that the Romans considered gold not as the representative of wealth, but the means to acquire it, for the senate forbade its exportation. (Cicero, Pro Flacco, 28.)

After the fall of the Roman empire, the few towns that rose in the middle ages, Pisa, Venice, Florence, Genoa, and the Hanseatic cities, made commercial establishments, and with them the 'mercantile' system, as it is called, may be said to have originated, at least in practice; for it was not enfeoffed and reduced to rules until centuries after. This system consisted in local or foreign trade as a social system, of selling dear and buying cheap, and thereby realising, by the exchange, a surplus in bullion, which surplus was employed in increasing the quantity of produce to be sold. Shipping, foreign marts, colonies or factories abroad, were the means employed for these objects. But as each merchant nation sought a monopoly of trade, restrictions were resorted to in order to favour its own commerce and impede or depress that of others. This led to jealousies and wars, which ended with the ruin of one or the other of the contendings parties. This system was narrow and exclusive; it considered only one state, and built the prosperity of that state on the depression of others. It was affected by the same error as the military system of conquerors, who went to exalt and enervate the conquered by oppressing and enslaving them, while overlooking the fact that the prosperity of other countries is part of the general prosperity of the world, in which our own country must share. The principle that 'the whole world as to foreign trade is one nation or association of nations as persons' (Sir Dudley North's Discourses on Trade, 1661), was not known as yet, and indeed it may be said to be hardly known, or at least acknowledged, even now, except by very few, in any country.

Another mistake of the states of the middle ages was that of considering gold and silver as constituting the exclusive wealth of a country; their attention was fixed on money not as a means, but as the end of trade, and as the most beneficial surplus, which they endeavoured to retain in their coffers by enacting severe penalties against its exportation. Hence the earlier Italian writers on commerce treat exclusively of money, its standard, and the evils of tampering with it. Gaspard Scarruffi, of Reggio near Modena, wrote in 1579, 'Discorso sopra le Monete, e dela vera proporzione fra l'oro e l'argent.' In 1588 Bernardo Davanzati of Florence wrote a short treatise, 'Sulle Monete, and another 'Sui Cambi,' or 'The Exchange.' Antonio Serra, a native of Cosenza in Calabria, published, in 1613, 'Breve Trattato delle Cause che possono far abbondare i Regni d'Oro e d'Argento.' Looking upon gold and silver as constituting the wealth of a state, Serra investigates the means of making them feel about them and bring them into circulation; he reckons manufactures, 'which a much greater return than agriculture,' and maritime commerce. But these means, adds Serra, 'are of no avail without fixed laws, order and population, for dispensing, for distributing,' he assures the reader, 'the same is not easy where there are continual changes of dynasties and laws.' This shows that Serra, considering the age and country in which he lived, had formed some correct and extended notions of political economy. However, the method and the author, being implicated, as it seems, in some conspiracy against the Spanish rulers of Naples, was imprisoned for ten years, and under went the torture seven times. It is not known when and where he died. He published, besides 'Trattato delle Monete,' and afterwards, 'Trattato del Valore delle Monete in tutti gli Stati,' in which he lays down sound principles for regulating the coinage.

The first writers on the subject of commerce at large appeared in the 17th century. Raleigh wrote, in 1595, his 'Essay on Trade'; Edward MISselden wrote his 'Circle of Trade,' in 1623, and Louis Roberts his 'Treasure of Traffic,' in 1641. Thomas Mun wrote, in 1621, his 'Defence of the East India Trade,' in which he explained the notion that money exclusively constituted wealth. He compared the exportation of gold and silver wherewith to buy goods for importation, with the seed which the husbandman throws into the ground, and whose germination produces the corn. Thus, in his 'Treasure of Foreign Trade,' published in 1664, Mun advocates the same principle. But Sir William Petty went further than any of his predecessors or contemporaries in asserting enlarged views of political economy. In his 'Treatise on Taxes and Contributions,' published in 1667, he was the first to state, though in an incidental manner, that 'it was the labour required for the production of commodities which determined their value.' He also wrote his 'Quantulumcumque,' in 1668, his 'Delineation of England,' in which he treated both of commerce and money, but the author was banished because some of his propositions reflected upon feudal rights and ecclesiastical privileges. Twelve years later, Van Neck published his 'Traite des Monnaies Royales,' in which he proposed a new plan of taxation.

In England, Locke, in his 'Essay on Civil Government' (b. xi., 40-43), argued at length to prove that 'labour is the constituent principle of value.' There is nothing more peculiar than the principle that 'true value is labour' (Gibbs Letter, 1762). (b. 124.) But these were incidental remarks, and not profound investigations on the subject of political economy.

In a tract published in 1677, entitled 'England's Great Improvement,' the whole body of trade is examined and its fallacy exposed. (Balance of Trade.) Sir Dudley North, already quoted, wrote 'Discourses on Trade,' 1691, which contain more clear and comprehensive notions on trade than had yet been published. Among other propositions, he lays it down as a maxim that 'there can be no trade unprofitable to the public; for if any prove so, men soon leave it off, and wherever the traders thrive, the public, of which they are a part, thrive also.' It is worthy of notice, by way of contrast, that Montesquieu in the following century wrote a chapter entitled 'To what Nations Commerce is prejudicial.' (Esprit des Lois, b. xx., ch. 21.) In 1696 Davenant wrote on 'The Commerce and Revenue of England.' In the next century Sir Matthew Decker wrote an 'Essay on the Causes of the Decline of Foreign Trade,' 1744.

A change of opinion was in the meantime taking place on the Continent with respect to the so-called 'mercantile system.' François Quesnay, born in 1694, a medical man by profession, and surgeon to Louis XV., being struck by the distressed condition of the French peasantry, endeavoured to draw the attention of the government towards relieving them, and embracing these ideas, he soon proposed the abolition of custom-houses between province and province, the free circulation of corn throughout the kingdom, the suppression of the corvées, and other similar reforms, which, however, were vetoed by the French king. Quesnay went further: he assumed as a principle that the
earth, or in other words, agriculture, was the only source of wealth, in opposition to Colbert's mercantile system, which fixed that source exclusively in trade. Quesnay showed that manufactures and merchants were highly useful, but he contended that they existed on a slice of the pie, and included nothing of the shape of rent, they did not add any greater value to the raw material of the commodities which they manufactured or carried from place to place, than was just equivalent to the value of the materials. He unreservedly declared that, during the time that they were engaged in those operations. He divided society into three classes: 1, a productive class, consisting of farmers and agricultural laborers, who subsist on a part of the produce of the land, reserved to them as the stock which was necessary for the proper nutrition of their capital; 2, a proprietary class, namely, those who live on the rent of the land, or the net surplus produce raised by the cultivators, after the necessary expenses have been deducted; 3, an unproductive class, consisting of manufacturers, merchants, servants, and handcraftsmen, 'whose labour, though useful, adds nothing to the national wealth, and who subsist entirely on the wages paid to them by the other two classes.' (Quesnay, Physiocratie, ou Constitution Naturelle des Gouvernements, 1766.) As a corollary to these positions, Quesnay and his disciples concluded that all taxes ought to fall upon the land.

Quesnay is considered as the head of the school called the 'Economistes,' which reckoned amongst its members the Marquis de Mirabeau, father of the celebrated Mirabeau, Mercier de la Rivière, Dupont de Néour, Condorcet, Raynal, Turgot, Necker, and other distinguished economists. Quesnay's principal work on political economy is the 'Physiocratie' already mentioned; but he published other tracts, especially an article 'Sur les Grains,' which was inserted in the 'Encyclopédie,' and in which he advocates the same principles. Though Quesnay considered agriculture as the only source of wealth, he did not advocate any exclusive protection for it, but rather a principle of freedom in all branches of trade. The 'Economistes' originated the 'Unilateral,' which was an attempt at the sound valuation of all real property, made by order of the government, for the purpose of assessing the 'contribution foncière,' or property tax, which they considered as the only legitimate tax. And this principle has prevailed in France and other continental countries, where even now the tax on land and houses forms the main source of the public revenue, being from 20 to 30 per cent. on the rent.

In Italy, Antonio Bandini of Siena had asserted the fundamental principles of the 'Economistes,' long before Quesnay, in a work which however was not published till 1775. Bandini wrote his 'Discorso Economico' in 1737, with a view of drawing the attention of the Tuscan government to its treatment of its resources, which country was called the Maremma of Siena. Bandini advocated freedom of trade in agricultural produce, and recommended the removal of all restrictions upon importation and exportation of the resources of the country, the cultivators of the soil an interest in the land, by the grant of long leases; an lastly he recommended the removal of the numerous vexatious taxes, and the substitution of a single tax upon land, not excepting ecclesiastical and other privileged property. A MS. copy of Bandini's book was presented to the grand-duke Francis of Lorraine, who however, being soon after elected emperor of Germany, and having removed to Vienna, could not attend to the affairs of the Maremma. After much influence on the part of the government of Tuscany, consulted Bandini's work, and put into execution the plan therein proposed. The Maremma of Siena assumed a new life, and its population has nearly trebled in the course of a century.

Ambroise, a merchant of Naples, by profession, wrote a treatise on taxation, 'Sul Tributo,' in which he admits that there are three sources of wealth, agriculture, handi- craft or manufactures, and commerce. He does not consider that the land produces wages and profits, but only a slice of the pie. For this slice he divided: 1, those who pay the proceeds of taxation, land-tax, customs, and gabelle or excise. He says that in a great commercial country the customs and excise, or indirect tax, ought to be preferred, but in an agricultural country, the landed tax ought to be the principal source of revenue. He condemns taxes on capital and persons, licences and patents, horses and agricultural implements, as detrimental to industry, as well as the government monopolies of salt, tobacco, &c. The author, who belonged to the mercantile school, falls into the error of that school, in wishing to sell as much as possible to foreigners, and buy as little as possible from them.

Ferdinando Galiani also, of Naples, ranks among the most distinguished writers on political economy in the 18th century. While at Paris, he wrote in French a book on the corn-trade, 'Dialogue sur le Commerce des Blés,' in which he took a middle course between those who advocated the elimination of all restrictions on the importation of food, and those who wished it to be subject to permanent restrictions. Galiani contends that no universal system can be established on that important subject, and that the laws concerning the trade in corn must vary according to the situation of individual countries, and that they may be determined by their respective soils and also their political institutions and relations to other countries. Galiani also wrote, in Italian, a work on money, 'Della Moneta,' published in 1750, which is reckoned one of the best on this subject. Taking an eminently practical point of view, he investigated the nature of the value of things, which he said was the result of various circumstances, namely, their scarcity, utility, the quantity and quality of the labour required for their production, and also the time. He extends his investigations to the value of men's abilities, which are to be estimated not only according to their rarity, but also according to the time required for their coming to maturity, and the difficulties encountered before they can attain a certain degree of perfection. However, Galiani's work is still valuable, though he contended that the precious metals were to be considered as merchandise. Galiani may be considered as a reformer of the old mercantile system. [Galiani.]

Gian Francesco Pagani, born at Volterra in 1715, published in 1721 a dissertation 'Sopra il diritto di Stato,' which was given to Preziole Cose,' or the just value of things, and in 1764 a history of the Commerce of Florence, with a digression on the value of gold and silver, and its proportion to the prices of other things in the 14th and 15th centuries, compared with those in the 18th century. Both works contain sound opinions and interesting facts. Pompeo Nerri of Florence wrote, in 1751, 'Osservazioni sopra il Prezzo legale delle Monete,' a work of considerable merit.

Gian Rinaldo Carli, born at Capo d'Istria in 1720, ranks with Galiani as one of the most distinguished Italian political economists. He wrote an elaborate work on coin and currency, and on the mints of Italy: 'Delle Monete e delle Munti dell'Italia,' 3 vols. (1752), in which he thoroughly examined the subject. Carli also wrote 'Ragionamento sopra i Bilanci Economici della Nazione,' in which he combated the fallacy prevalent in his time about the преимуществent of the corn-trade. He also wrote 'Economia dell'exportazione del brancale del corn-trade in a letter addressed to Pompeo Nerri, in 1771, 'Sul Libero Commercio dei Grani,' in which he agreed with Galiani in denouncing the wisdom of a general principle of unrestricted freedom of trade in corn, which he thought ought to be modified according to local circumstances, because he considered the supply of corn as a subject deeply connected with administrative policy, and not a mere commercial question. Carli had a powerful mind, and was the ablest of the 'Economistes.' Other particulars concerning this distinguished writer are given under CARLI.

Antonio Genovesi, born in 1712, at Cassino, near Salerno, became professor of the new chair of commerce and mechanics, founded at Naples in 1755, by Bartolommeo Intissi, a wealthy Florentine merchant of that city. Genovesi published his lectures under the title of 'Lezioni di Economia Civile,' and took into the Mercantile system and that of the 'Economistes.' He reckoned three sources of wealth, agriculture, arts, and commerce. He extols agriculture as an ample and perennial spring of public wealth, but he also appreciates commerce and manufactures, and considers the arts of production. With regard to commerce, he adopts the re- strictive system of the mercantile school as to foreign goods, whilst he agrees with the 'Economistes' as to the freedom of trade in corn, and of internal trade in general, as well as
with respect to the interest of money. He infallicates the principle that labour constitutes the capital of nations as well as of families. But he did not fall into the vulgar error of considering whole classes of society as unproductive. He knew that some of the labour, such as that of men of science, scholars, lawyers, soldiers, magistrates, and others. Genovesi wrote also other treatises on political economy, which he succeeded in rendering popular in his own country.

The Italian political economists of the eighteenth century are: 1, Francesco Algarotti of Venice, born in 1712, who wrote 'Saggio sul Commercio,' in which he exhibits commerce as the source of wealth and power, and he quotes the example of England. He also wrote a few other works on the advantages which might be derived from Africa, in a commercial point of view, by the nations of Europe: 'Sulla Preferenza dell'Africa in confronto dell'Asia e dell'America, rapporto all'Industria e dal Commercio degli Europei.' 2, Antonio Zanoni of Udine in the Venetian territory, born in 1696, a merchant by profession, wrote letters on agriculture, commerce, and manufactures, which he censured also by his exertions. He was a man of a liberal mind, and a great philosopher. 3, Cesare Bonez- "ria of Milan wrote lectures on political economy, in which he expounded, among other things, the advantages of the division of labour, and he investigated the relations of wages and the nature of productive capitals. With regard to the corn-trade, he agreed with Carli and Galani in not advising any general system. He considered large masses of property as more advantageous to a country than small ones. In general, Beccaria thought that the increase of the 'Economists.' [BECARIA, CESARE BONEZIA] 4, Pietro Verri, born at Milan in 1727, the intimate friend of Beccaria, although he differed from him on several points of political economy, wrote 'Memorie sull'Economia Pubblica dello Stato di Milano,' in which he shows the decline of that country during the two centuries of Spanish dominion, and ascribes it to the ignorance of its rulers and the absurdity of the laws. He wrote also 'Sulla Legislazione immediata sul Commercio dei Grani,' in which he advocated the principle of absolute liberty. Lastly, he wrote 'Meditazioni sull'Economia Politica,' which were published in 1771, and have been translated into several languages. It is an elementary but useful book. 5, Ferdinando Paololetti, born in 1717, near Florence, wrote, in 1769, 'Pensieri sopra l'Agricoltura, and, in 1773, 'Veri Mezzi di rendere felici le Societa,' in which he advocates a freedom of trade. 6, Gian Battista Vaceo, born at Montoni in Piedmont, in 1723, wrote 'Saggio Politico sulla Moneta,' in 1772, in which he treats of various questions of political economy. He afterward wrote, in French, 'Memoire sur les Causes de la Mendicite et sur le moyen d'en faire fin.' He published the 'Academia di Valence in Dapinst's, in 1788. His other works were: 'Sulla Felicita Publica considerata nei Coltivatori di Terre proprie,' and 'L'Usura libera.' 7, Giannomaria Orsetti, born in 1713, and author of the 'Economia Nazionale' libri sei, 1774, which however remained unknown except to a few friends of the author, until Custodi inserted it in his great collection of the Italian economists. His views were original, and he belonged to none of the schools already established. He lays it down as a fundamental principle that the capital of a nation is always in proportion to the population, and that only difference is in distribution. If a portion of the population becomes richer, it can only be at the expense of the rest. As a consequence of this principle, he asserts that all endeavours to increase industry with a view to increase the national wealth are futile. But he supports also the principle of freedom of trade between nations, because he says, every nation has its own capital, which cannot be diminished nor increased by exchange. Ortes wrote also 'Riflessioni sulla Popolazione per rapporto all'Economia Nazionale,' in which he maintains general positions which have been since developed by Malthus, such as that population increases in proportion to the increase of production; that population does not always increase with the means of subsistence; but, in 1780, Filippo Brignati, a native of Naples, published, in 1780, 'Essai Economico del Sistema Civile,' in which he refutes the theories of Mably, Rousseau, and Linguet, who asserted that the state of society, and civilization, commerce, and wealth, were the origin of all the evils with which man is afflicted. 9, Gaetano Filangieri, born at Naples in 1752, is known by his work on legislation, the second volume of which treats of political economy. He belonged to the school of the French economists, but he was not a servile follower of the French school. He espoused the principle of trade; he had no prejudices against luxury, but he advocated direct taxation, or the tax on land, and he maintained that large cities were injurious to the prosperity of a country. [FILANGIERI] 10, The Marquis Caracciolo, while he was vicere of Sicily, wrote 'Riflession de l'Economia e l'Estruzion de Frumenti della Sicilia fatte ad occasione della Caristia del 1784 ed 1785.' The author, being struck with the fact that Sicily, once the granary of Rome, should be so impoverished, set about investigating the causes of this great change. He recommended freedom of internal trade, but with regard to the exportation of corn, he thought it might be suspended at times by an act of government of the kingdom of Naples. 12, Pietro Soranzo, on the contrary, in a 'Memoria sulla Libertà del Commercio dei Grani della Sicilia,' published in 1795, advocated an entire and permanent freedom in the corn-trade, quoting the example of Tuscany, where that system had been in practice since 1767, and had attended with the best results. 13, Maurizio Solera, a native of Piedmont, wrote, in French, 'Essai sur les Valeurs,' which he presented in 1786 to King Victor. He proposed an agricultural and general bank to promote manufactures, which project the commission, and his Report was published and dedicated to the duke: 'Riforma de' Istituti Pii della Città di Modena.' 1787. He was one of the first in Italy (Ortes and Genovese had already expressed opinions similar to his) who censured indiscriminate charity as encouraging idleness and improvidence, and thus creating pauperism. Italy abounded at that time, more perhaps than any country in Europe, with charitable institutions. In Modena, which he described, there were 7000 destitute persons. Ricci demonstrated from historical facts that pauperism increases in proportion to the facility of obtaining relief. He censured legacies for portioning poor girls, and other premiums on marriage, and said that the increase of population should only be the result of labour and frugality, by which the means of subsistence are increased. He proposed that charitable institutions should be supported by private charity, and not by the government, which should give employment to paupers and vagrants, instruct the poor classes, and endeavour to raise their moral condition. The advice of Ricci was acted upon by the government of Modena. But there was still another society, the House of Lecce, in the kingdom of Naples, filled several offices in the administration of his country, and wrote observations on the tariff and on national wealth: 'Osservazioni sulle Tariffe e sui contrabbandi,' 'Saggio di legge del Commercio delle Merci,' and 'Saggio della Finanza Nazionale.' In speaking of commerce, he says that a full and universal liberty would be the best system, but as this liberty is not admitted by any nation, the nation that should alone put it in practice might find it turn to its disadvantage, and its condition would be that of a lamb among wolves. He therefore advises not the prohibitive but the restrictive system, or in other words, a system of custom-house duties on the principle of reciprocity. 16, Count Mengotti of Bellagio, in the province of Como, who is celebrated for his exclusive mercantile system, which he styled 'il Colbertismo,' from the name of Colbert, the great patroniser of that system. This work was written in reply to a query proposed by the Economical Society of Florence, and has been put in the following words: 'Whether the state which by its locality and the nature of its soil, is susceptible of increase of produce and population, it be most advisable to favour manufactures by certain restrictions on the exportation of the raw material, or to have it entirely free, for a recommendation perfect freedom of trade, and his book obtained the prize. It is one of the best written works of the Italian political economists. Mengotti, Beccaria, and Galliari are three writers who, by the novelty of their ideas and the

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Letters of Paris. Mengotti maintained, that until the first Pol
of the Romans had no commerce in an extended
sense; that from the first Punic war the battle of Actium
their commerce consisted in carrying home the spoils of
other nations; that from Augustus to Constantine their
trade was mainly passive and ruinous; they produced nothing
but luxury and their own necessaries; and even the neces-
saries of life with the money they extorted from the subject
provinces, and at last they fell gradually again into poverty
and barbarism.

There were the principal Italian political economists of the
eighteenth century. The complete collection of all the
Italian writers on political economy was edited by Custodi,
in 50 volumes, 8vo. Melzi, the vice-president of the
Italian republic, supplied him with the necessary funds for
the undertaking. Custodi, after the death of Melzi, was
made councillor of the state of the kingdom of Italy, baron,
that of the iron crown, and secretary of finance.

In England the science of political economy made a
marked progress in the latter part of the eighteenth cen-
tury through the exertions of Adam Smith, who is con-
sidered as the founder of the modern school. In 1776
Smith published his great work, with the modest title of
'An Enquiry into the Nature and Causes of the Wealth of
Nations.' In the first book he treats of the division of
labour and its wonderful effects, of the real and nominal
value of commodities, the wages of labour, the profits of
stock, the accumulation of capital, and the distribution
of national accumulation, and employment of stock or capital. Book
iii. is in a great measure historical, and treats of the different
progress of opulence in different nations. Book iv. is em-
ployed in discussing the various systems of political eco-

nomics. Smith did not consider his system as that of the
system or that of the economists; he showed, in opposition
to the latter, that the labour of manufacturers and merchants
is productive and is a source of wealth, but that he at the
same time considered agriculture as the most productive kind
of labour, and the home trade as more productive than foreign
trade. These positions have been combated by writers who
have adopted many of his general views. On the subject of
foreign trade Smith is as explicit as he is just. He has, some
maintaining that all foreign trade is advantageous to a
country precisely in the degree in which it is profitable to
those who are engaged in it, and independently of war and
peace and other political variations; whilst others contend
that the immediate interest of the trader is not in all cases
a criterion of the permanent national interest.

Adam Smith's doctrine of universal free trade has found
many opponents, and is in fact still a theory, for it is not in
practically applied in the science: that productive unpro-

ductive labour has been contradicted by Malthus, in
his 'Principles of Political Economy,' and in France by
Say and others. Smith considered commerce as an ex-

1798 Malthus published his 'Essay on the Principle
of Population,' in which he demonstrated that an increase in
the means of subsistence is the only sure criterion of
real permanent and beneficial increase in the numbers of
any people. He stated that the population never falls be-

ow the level of subsistence, but that it tends, on the con-

tary, always to be excessive in war and by ordinary
physical causes. A consequence of these positions is,
that any artificial stimulus to the increase of population by
premiums on marriage, laws against celibacy, &c., is in-

jurious. These inferences had been anticipated by the Ita-

lian political economists Orsini and Ricci.

In France, J. B. Say published, in 1802, 'Traité d'Eco-

nomie Politique,' in which he expounded the principles of
Adam Smith, applying many original considerations, esp. on
the effects of ill-usage and causes of gluts resulting from
over-production, which, he maintained, can only be
partial and temporary, and can never occur in every species
of commodity at once. Say has written several other works
on political economy. Garnier also translated the work
of Smith into French.

In 1815 appeared an 'Essay on the Application of Capi-
tal to Land,' by Mr. West, Oxford, 1815, and about the
same time Malthus published 'An Enquiry into the Nature
and Progress of Rent,' a subject which was afterwards
investigated and expounded by Mr. Ricardo, in his 'Princi-
ples of Political Economy and Taxation,' published in 1817,
and which is generally considered as the most important work
on political economy since the time of Adam Smith. (Ri-

cardo.)

Among other contemporary writers on political economy
may be mentioned, in England, Mill [Mill], McCulloch,
Senior, Tooke, and Torrens. In France, Simondi has written
several works on political economy. De la Richesse des
Nations, ou Nouveaux Principes d'Economie Politique,
and 'Etudes sur l'Economie Politique,' which latter work
contains many interesting facts, exhibited and commented
upon in the usual attractive if not always strictly logical
manner of the author. Gentile and Melzi have written
upon the principal systems of political economy: 'Des Sys-
tèmes d'Economie Politique, et de la Valeure comparative
de leurs Doctrines,' 2 vols. 8vo., 1821, a work well deserv-
ing a perusal, being written in a temperate spirit and unas-
numing tone.

In Germany, Storch published, in French, 'Couru d'Eco-
nomie Politique,' 6 vols., Petersburgh, 1815, and also 'Be-
trachtungen über die Natur des Nationalökonomie,'
Halle, 1825. Schmalze wrote 'Staatswirtschaftslehre,' 2
vols., Berlin, 1818; and Jakob, 'Grundsätze der National-
ökonomie,' Halle, 1825.

The Spaniards and the Portuguese, who are writers on political economy towards the end of the last century, Ulloa and Ustariz.

In Italy, the principal writer of the present century on political economy is Melchiorre Gioia of Placentia, who died in 1824. Gioia was a jurist, a moralist, and a politi-
cal economist, as well as an exponent of the principles of
Adam Smith; he applied them to the facts of real life; and his works and a short account of his life are given under his
name. Here however we shall dwell at more length upon
his great work on political economy, 'Nuovo Prospetto delle
Scienze Economische,' 6 vols. 4to., Milan, 1815-17. Gioia
quotes most of the writers, Italians and foreigners, who had
preceded him, and endeavours to condense their various
systems and opinions into a series of principles with their
legitimate deductions. He lays down the following objects
in the first volume of his work: 1. To establish a theory of
the value of the raw materials; 2. To ascertain the princi-
ple of the distribution of labour; 3. The means of obtaining the above results consist in power,
which is increased by capital, machinery, credit, association,
distribution of labour, in knowledge of the means to improve,
and will or activity, which is strengthened by liberty, secu-

rity, and enlightened opinion of the people in general.
A great part of the work is in a tabular form, with quotations
and original remarks. Speaking of the influence of the
government on the production, distribution, and consump-
tion of wealth, Gioia nos a number of cases in which that
influence may be useful, and a number of others in which it
is injurious. Under the first head he reckons the con-
struction of good roads, the distribution of courts of justice
in each district, the governmental monopoly in each manufac-
ture or in each commodity, the establishment of public libraries, consisting of useful books,
collections of natural history, and of philosophical
instruments, botanical gardens, &c.; the foundation of
gratuitous elementary schools and of technical schools of
arts and trades in every town; freedom of the press;
the sending well-informed travellers into foreign
countries to examine and report the discoveries and im-
provements made in. Among these the influence of the
government is injurious, Gioia reckons—
1. Too heavy taxation, which, by gradually diminishing the
disposable capital, prevents its being employed in making
improvements. 2. The establishment of public burthens.
3. The unequal distribution of public burthens. 4. The payment of the judges by fees on
the causes which they decide, which is still the case in several
of the countries of the Continent, instead of a fixed salary suffi-

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The Gioia manufactories, one also seppe treats English others, sider net into consideration economy wealth fed, produced of his Storico dell’Economia della Specie Umana, 4 vols. Svo.; 2, Carlo Baselli of Modena, who published, in 1817, ‘Nuovo Esame delle lingenti della Privata e Pubblica Ricerche;’ 3, Giuseppe Pechio, who wrote, 1, ‘Saggio Storico sull’Amministrazione Finanziaria dell’ex-Regno d’Italia, dal 1802 al 1814,’ London, 1826, in which he treated of various subjects connected with political economy; 2; ‘L’Apostolato di una Civiltà,’ Rome, 1827, in which he of the commercial crisis which took place in England in 1826, and of its causes, effects, and remedies; 3, ‘Storia dell’Economia Pubblica in Italia,’ Lugano, 1829, a work to which he had carefully been referred for an account of the Italian writers on political economy. At the end of the work Pechio draws a parallel between the Italian and the English economists, from which we give the following extract, without any opinion on the correctness of the author’s views:—The principal difference between the English and the Italian writers consists in the definition of the science and the manner in which they treat it. The English make political economy a science distinct from all others; it is for them that it is a science, and they consider it as a complex science, and they treat it in with moral, civil administration, and general happiness. The English, being intent upon the object of wealth, approve of large divisions of property, and consequently as entails, because large properties afford a greater net profit in the shape of rent, without concerning themselves with the political and moral consequences of this mode of distribution. The English are capable of the of the country, without heeding the deterioration of the and health of the people in crowded and heated work-rooms; they favour the use of machinery, because they produce at a lower rate than their competitors, and still further the danger of over-production, and of the sudden stagnations of trade, by which thousands of workmen are thrown into distress. They look upon the workman himself as a productive machine, condemned to a labour, often excessive, imprisoned in sultry cotton-factories, or buried many帧s deep in the bowels of the earth, to extract coal, tin, or iron. And if they recommend that the workman be well fed, this is in order that he may work harder and produce the more, a species of philanthropy similar to that of the post-master, who feeds his horses well in order that they may do most work. Some of the English seem to wish to transform the whole agricultural population into mechanics, and work even the fields by means of machinery, without reflecting that by so doing they would substitute an emasculated, weak, and short-lived population for one vigorous and hale. Is wealth the only thing desirable? But supposing that it were so, let us reflect that the increase of wealth thus produced is not subdivided among those who work; that they only get a bare subsistence, and all the rest of the profit is accumulated in a few hands... The Italian writers, on the contrary, consider the science of polite economy in all its relations to society; they do not seek wealth only, but the welfare of the greatest possible number of individuals. They consider every principle, every law, under their aspect, and with a view to the consequences. If they treat of the origin of the right of property, and end with the consideration of the question whether it be good policy to let the subsistence of a whole country depend on foreign importation, which may be suddenly stopped by various accidents. If they treat of the division of property, they investigate the influence of the law of primogeniture on public morals and domestic harmony. In discussing the subject of the greatest produce of land, they give importance to this principle, that the exclusive enjoyment of the advantages of large farms over small ones induced the government of Piedmont to repeal the decree by which the rice-growers belonging to the crown or the communes were to be parcelled out into small holdings. Gioia gives the preference to the arts over agriculture, and he is the only one among the Italian political economists who has estab-lished the principle of the 'association of labour' (as in the case of joint-stock companies) as an important source of wealth. Having thus been occupied upon his writings. Gioia wrote also his 'Filosofia della Statistica,' which may be considered as an appendage to his work on political economy. [GIOIA] The other Italian writers on political economy in the present century are, 1, Russi, who in 1808 published a work 'Dell’ Economia della Specie Umana,' 4 vols. Svo.; 2, Carlo Baselli of Modena, who published, in 1817, ‘Nuovo Esame delle lingenti della Privata e Pubblica Ricerche;’ 3, Giuseppe Pechio, who wrote, 1, ‘Saggio Storico sull’Amministrazione Finanziaria dell’ex-Regno d’Italia, dal 1802 al 1814,’ London, 1826, in which he treated of various subjects connected with political economy; 2; ‘L’Apostolato di una Civiltà,’ Rome, 1827, in which he of the commercial crisis which took place in England in 1826, and of its causes, effects, and remedies; 3, ‘Storia dell’Economia Pubblica in Italia,’ Lugano, 1829, a work to which he had carefully been referred for an account of the Italian writers on political economy. 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Some of the English seem to wish to transform the whole agricultural population into mechanics, and work even the fields by means of machinery, without reflecting that by so doing they would substitute an emasculated, weak, and short-lived population for one vigorous and hale. Is wealth the only thing desirable? But supposing that it were so, let us reflect that the increase of wealth thus produced is not subdivided among those who work; that they only get a bare subsistence, and all the rest of the profit is accumulated in a few hands... The Italian writers, on the contrary, consider the science of polite economy in all its relations to society; they do not seek wealth only, but the welfare of the greatest possible number of individuals. They consider every principle, every law, under their aspect, and with a view to the consequences. If they treat of the origin of the right of property, and end with the consideration of the question whether it be good policy to let the subsistence of a whole country depend on foreign im-
his paternal name, and assumed that of Poliziano, from his native town Mons Politanus. Lorenzo de Medici took care of his education, placed him under good preceptors, and provided for all his wants. He afterwards entered into the service of the Medici, and the profit from his law, and what he received was made a canon of the cathedral of Florence. He was entrusted by Lorenzo with the education of his children, as well as with the care of his library and collection of anti-
quantities. The history of his life is told in the 'Politian,' the Latin and Greek at Florence, a chair which he filled with great reputation. He wrote scholia and notes to many ancient authors, Ovid, Catulius, Statius, Suetonius, Pliny the Younger, and the 'Scriptores Historiae Augustae'; he translated into Latin the history of Herodotus, the manual of Epictetus, the aphorisms of Hippocrates, some dialogues of Plato, and works from the Greek. The 'Miscellanea' of Poliziano, published at Florence, in 1469, consists chiefly of observations he had made on the ancient authors, which he arranged for the press at the request of Lorenzo. Merula made an attempt to depreciate this work, which led to an angry controversy between the two scholars, in the midst of which Merula died. Lorenzo disposed of the manuscript per-
viously with Bartolomeo Scala, in which the two disputants abused each other in Latin, according to the custom of scholars in those times.

Poliziano was connected and vain, and very irritable, and his reputation was destroyed by an unbecoming altercation with Madonna Clarice, Lorenzo's wife, because she interfered in the education of her children, a thing which Poliziano seemed to think preposterous in a woman; and at last his behaviour to her was so impertinent that she turned him out of her house in the country, and she wrote to her husband at Florence to inform him of what she had done. Lorenzo, perceiving that a reconciliation between the of-

fended woman and the irascible scholar was almost impossible, gave Poliziano an appointment in one of his houses at Fiesole, where he wrote his Latin poem 'Rusticus.' During Lorenzo's last illness, Poliziano attended the death-bed of his patron, who gave him tokens of his lasting affection. Poliziano wrote an affecting monody on Lorenzo's death, and not long after died himself, in September, 1494, at the age of forty, and was buried in the church of San Marco, agreeably to his request. Jovius and others have told several improbable stories as to the immediate cause of his death. (Corniani, Seoli della Letteratura Italiana; Rossetti's Life of Lorenzo de' Medici.)

The other works of Poliziano are—1, 'Panepistemion,' in which he engraved the branches of human knowledge; 2, 'Sylvae,' odes, epigrams, and other short Latin poems; 3, his Italian poetry, especially his poem on the Giostra, or tournament of Giuliano de' Medici, which is much admired. He also wrote the 'Orfeo,' which is cons-

idered as the first tragedy written in Italian; a musical drama. His Latin works, including 12 books of Lettres, were published at Paris, 1512.

POLLARDS are trees which have had their tops re-

peatedly cut off for the sake of the foggot-wood, which is used for burning and heating bakers' ovens. The appear-

ance of an old pollard may, in particular situations, be thought picturesque, but nothing can be more unsightly in a landscape than rows of pollarded trees, as seen in some countries. It is only in the case of a few trees of quick growth, such as willows and poplars, that there is a profit in making pollards of them. To have oak, ash, and elm pollmed, which if left to grow would in time pro-
cede valuable timber, is a very great loss to the proprietor of the land, and but little profit to the tenant. Supposing an oak pollmed when twenty years old, and lopped every ten years after, there will be seven loppings only, worth a few shillings in each, enough for a horse's shoes; but to acquire the age of one hundred years, would have afforded excellent timber for ship-building, and produced five times as much money as all the loppings put together. It is usual to allow tenants to top such trees as beeches, but it is not as a rule done judiciously on good sound land, the quan-
tity taken from the farm for this purpose will be as profitable as if it had been kept in cultivation. Trees are often planted in soils which are not worth cultivating; and hence the profit which would accrue from the damage done to the land by the roots and shade of trees be taken into the account, it will be found that it is more profitable to have the wood growing by itself. On the margins of low rivers running through marshy grounds, it may be profitable to plant willows, poplars, and other soft-wooded and rapidly-growing trees, in order to top them at stated intervals. Their timber would be of little value if they were cut when in their natural state; but being lopped every seventh year, they grow fast and straight, which are readily disposed of. Hence the common saying that 'a willow will buy a horse before an oak will buy the saddle.'

To manage pollards advantageously the head of the tree should be cut off at a moderate height while the trees is young, and the shoots which spring from the crown must be frequently cut off before they begin to branch out. Thus a good head is formed, throwing out many shoots, which may then be left to grow till they are of a useful size. The willow takes root so readily, that if a branch twelve or fourteen feet long is put two feet into the ground, it will grow, and form a tree at once, which after a few loppings will be-

come a pollard.

If the appearance of rows of pollards is unsightly, the cutting the side branches of trees in hedgerows, leaving only a little tuft at the top, is much worse. No branch should be permitted to grow above ten feet, and the top of every tree to be cut by a tenant, nor the top of any tree to be cut off in order to make a pollard of it, and a clause to that effect, with a severe penalty, should be inserted in every lease.

Pollen is the organic matter by which impregnation is effected in the vegetable kingdom. It is the naked eye a very fine powder, and is usually enclosed in the cells of the anther; but examined with the microscope, it is found to be a massless substance of pollen-corpuscles, each one of which in are suspended drops of oil from the 20,000th to the 30,000th of an inch in diameter, and grains of starch five or six times as large. The shell, or exine, of these cases is lined in most instances with a delicate membrane, or intine, which, when the pollen falls upon the stigma, pro-

trudes beyond the exine at some point or points of the sur-

face, and lengthens into a tube of extreme tenuity, which penetrates the stigmatic tissue, and is called the pollen-
tube. This emission of a tube takes place in from six to

twenty-four hours after contact between the pollen and the lubricated face of the stigma. The pollen-tubes continue to lengthen until they reach the foramen of the ovule, which is separated from the ovary by a layer of spheroidal, or ovoid, cells, with the apex of the nucleus of the ovule, where eventu-
ally the vegetable embryo makes its appearance. The con-
tents of the original case of the pollen are emptied into the tube, where they disappear.

The pollen dust is usually spherical, but may also assume other figures; in some plants they are depressed, in others cylindrical, in others triangular; in most instances they are simple; but in Inje, Acasia, and the allied genera, and in Orchidaceae, there are several grains adhering in definite or indefinite numbers. We generally find pollen lying loosely in the cells of the anthers; but in the Ascle-
piadaceous order the grains are enclosed in a bag consisting of the lining of the cells, which is continuous.

The minute oily and amylaceous molecular matter that is suspended in the fluid with which it has been stated that the pollen grains are filled, moves actively, each particle upon its own axis, and this has given rise to the theory that these molecules were of an animat nature. They appear however to be in no respect different from similar matter in other parts of the vegetable fabric, except in the minute-

eness of their division.

(Lindley's introduction to Botany, ed. 3, book i., cap. 2; Przeitch. Uber den Pollen, 4to, 1837, St. Petersburg.)

POLLENZA. [Mallorca.]

POLLIA, a genus established by Mr. J. E. Gray for cer-

tain species of Pollia. In his introduction to this genus, Mr. Gray proposes to comprehend under this generic appell-

ation different from Triton in the absence of external varices, and from Purpura in the presence of columnella. There are also columnellae on the outer lip.
POLLICIPES. [CIRCEIPPA. VOL. VII. P. 208.]

POLLIO, CAIUS ASIUNIUS, was born B.C. 76, and appears to have been a member of a family of no negligible consequence. (Vell. Pater., ii. 128.) He is called by Ca
tullus a Marrucianin, and was probably a descendant of Herius Asinii, who commanded the Marrucini in the Marcellus war, and killed himself in the battle of the Clastis. 32.)

We first hear of Pollio as the public accuser of C. Cato (n. 54), who was acquitted through the influence of Pompey. (Tac. Dial. de Orat., 34; Cie. ad Att., iv. 15, 16.) On the breaking out of the civil war between Pompey and Caesar, he supported the latter, and accompanied him in the passage of the Rubicon. (Plut. Cees. 32.) He was afterwards sent by Caesar, under the command of Curio, to Sicily and Africa, and after the defeat of the latter in 46, was employed with a forlorn hope to force the neighbourhood of Utica, and thence proceeded over to Italy to join Caesar. (Appian, De Bell. civ., i. 45, 46.) He was present at the battle of Pharsalia (Plut. Pomp., 72), and two years afterwards (n. 46) he accompanied Caesar into Africa and Spain, and on the return of Caesar to Italy it appears to have been made one of the fourteen prants who were appointed by Caesar at that time. (Drumman, Gesch. Rroma. vol. ii., p. 6.) Pollio probably did not return to Italy with Caesar, since we find him in the following year (n. 45) acting as Caesar's legatus in Spain, where he carried on the war against Sextus Pompeius. (Dio., xlv. 10; Vell. Pater., ii. 75.) On the death of Caesar (n. 44), he was declared to be the real representa
tive (Ad Fam., x. 31, 32, 33), to have been inclined to support the senatorial party; but after Octavianus united himself to Antony, Pollio no longer hesitated to support the latter. (Dio., xlvii. 10.) Cees., 4.) His second province was the govern
ment of the province of Gallia Transpadana, and was nominated by the triumvir as one of the consuls for n. 46. During his consulship, Virgil addressed to him the fourth Eclogue. After the following year Pollio was appointed by Antony against the Dalmatians, whom he conquered, and obtained the honour of a triumph. (Dio., xlviii. 41; Appian, De Bell. civ., v. 75; Fast. Capitol.; Hor. Carm. ii. 1.) Pollio was sent by Antony to base his rights in Thessaly, after having been deprived of his power in public affairs. He took no part in the war between Augustus and Antony, and when asked by the former to accompany him to the African war, he declined doing so on account of his early friendship with Antony. He died a. d. 4, at his Tuscanian villa. (Clinton's Fast. Hell.)

Pollio was a great patron of learning and the fine arts, and was also the author of several works which were greatly praised by his contemporaries. He appears to have pos
sessed an extraordinary aptitude for the Latin tongue, at least Nat., xxxvii., 4, 6.) He founded the first public library at Rome, in the Atrium Libertatis, on Mount Aventine. (Isid., Orig., vi. 5; Ovid, Trist., iii. 1, 71; Martyr, Epigr. xii. 3, 5.) He lived in veneration with the statesmen and orators of his time, whom he had dedicated to him the first ode of his second book. He was a poet, an orator, and an historian, and his poetry, and more especially his tragedies, if we can trust the suspicious testimony of Virgil (Lyd. iii. 85; viii. 10) and Horace (Carm. ii. 1, 9-12; Sat. i. 10, 42), were far from common. His history of the civil wars, which was comprised in seventeen books, is quoted or referred to by several of the ancient writers. (Plut., Ces., 46; Suet., Ces., 39; Appian, ii. 82; Tac., Ann. cleth.) His orations are fre
quently spoken of by Quintilian, but his style is condemned as deficient in chiarosc and ease. (Quint. Inst. Orat., x. 1; compare Tac. Dial. de Orat., 21; Senec., Ep. 16.) Pollio also appears to have been descended from a family of great

POLLIO, TREBELLIIUS. [Augusta Historia.]

POLLONTES, De Monitio's name for a genius of micro
cosmic proportions. (Foraminifera, vol. ii. p. 33.)

POLLUX, JULIUS, whose real name is Polydeuces (Pollux), a celebrated grammarian and teacher of rhe
toric, was born at Naucratis in Egypt, about the middle of the first century before our era. He was secondly educated by his father, and afterwards received instruction from Adrian the sophist. He was a favourite with M. Aurelius and his son Commodus, by the latter of whom he was placed in the number of rhetorics in Athens. He died at the age of fifty-eight.

Pollex wrote several works, all of which have been lost except his 'Onomatiosaition' (Ouoswaiiiiaos). The 'Onomatiosaitia' was arranged in alphabetical order, but is divided according to subjects, and gives the different Greek words which belong to each subject. Thus all the words relating to agriculture are classed by themselves, and in the same way all words belonging to ships, carriages, houses, &c. are treated of separately. T. Pollex is not merely a dry list of words, but contains numerous quotations from the different Greek writers, and supplies us with much information relating to antiquity, of which we must otherwise have been ignorant. It is divided into ten books, and was dedicated to Commodus during the life-time of Aurelius. The first edition was published at Venice, in 1502. The best editions are by Heinestrau, 1776, 4 vols. folio, and Dindorf, Leipzig, 1824, 4 vols. 8vo.

There was also another writer of the name of Julius Pollex, who lived in the 10th or 11th century of the Christian era, and wrote a 'Chronicle,' or 'Universal History from the Creation of the World to the time of Valens.' This work, which has come down to us, has been edited by Bianconi, Bonn, 1779, folio; and Hartel, Munich and Leipzig, 1792, 4 vols.

POLLUX. [Gallipoli.]

POLO, MARCO, the son of a Venetian merchant named Niccolo, who set off from Venice with his brother, in the year 1250, for Constantiople, whence, having purchased a valuable document, he proceeded to La Tana at the mouth of the Tanais. From La Tana he proceeded inland to Bulgar on the Volga, the residence of Barga, the Khan of the Western Tartars, or of Kaptchak, who purchased his wares at a very liberal price. From the residence of the Khan the two Venetian travellers proceeded round the north side of the Caspian Sea to Bok
hara, where they arrived in the year 1261. They re
mained three years at Bokhara, during which time they supplied the Khan with various wares, and in 1264 they met an ambassador sent by Hulaku, grandson of Genghis, the ruler of Persia, to Kublai, the great Khan of the Mongols, or Khalkhas, who ruled over Tartary, and who lived at Cesar, and called himself the Great Khan of Tartary. The two Venetians agreed to accompany the ambassador, and arrived at Kemenfu in the following year, 1265. Kublai received them well, and wishing to esta
blish a connection with the Western world, they were furnished with Kublai's cre
dentials, returned towards the west, and arrived at the coast of Syria, from whence they sailed for Venice, which they reached in 1269, after an absence of nineteen years. Nicc
nolo reported to the Doge of Venice, that their journey was a happy one, and that they had only a confused knowledge, he commissioned the two brothers Polo to proceed as his envoys to the pontiff of the Christians, requesting him, in a letter, to send him a hundred men, learned in the various sciences and arts, to in
struct his people. The Polo, furnished with Kublai's cre
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Owing to the death of Pope Clement IV. and the long interregnum which followed, the two Polo could not execute the mission. Kublai then sent them back to China, with instructions to re
turning to Tartary, and taking young Marco with them. But after they had landed on the coast of Syria they heard of the election of Gregory X., who was then at Poletamis, whom they repaired, and conferred with the new pontiff on the subject of their mission. Gregory appointed two Dominican friars to accompany them. They set out for the interior in 1272, but the two friars, being frightened at the war which was then raging in Asia between Sultan Bubars the Mameluke, and the Mongols, determined on pre
cutting their journey, and the three Venetians proceeded alone through the regions of Central Asia. They reached the court and camp of Kublai Khan in 1275, where they
met with the most favourable reception. Kublai was especially pleased with Marco, and he entrusted him with missions to various parts of his empire. Marco Polo was the first European who visited China Proper: he made memoranda of what he saw himself, and eagerly collected all the information that he could obtain about those parts of the world which he had never seen.

In revising his narrative therefore a distinction ought to be made between his direct observations and those which he derived from the report of others. After a lapse of several years, an ambassador arrived at the court of Kublai Khan from Argon, the ruler of Persia, who asked in marriage a princess of Kublai family. Kublai chose a princess named Cagnatin, and prepared to send her to Persia by sea, with several ambassadors and a large retinue. The three Polo obtained, though not without difficulty, to be included in this embassage. They set out in 1291, traversed China, embarked on the coast of Fo-kien, which lies opposite to the island of Formosa, and thence they proceeded through the straits of Malacca to the island of Sumatra, and thence toOrmuz in the Persian Gulf. On landing they proceeded to Teheran, where they found that Argon was dead, and some time after, hearing also the news of the death of Kublai, the three Venetians thought of returning home, and at last arrived in Switzerland in 1292, where it is said that they lived between Venice and Genoa. Marco Polo obtained the command of a galley forming part of the squadron commanded by Andrea Dandolo, which was defeated by the Genoese under the command of Michele Ormanni, and taken prisoner by the Adriatic. Marco Polo was carried prisoner to Genoa. In his captivity he used to relate his adventures, and was eagerly listened to. He sent to Venice for his memoranda, which he had taken down in his travels, and having made acquaintance with a fellow-prisoner of the name of Ricchello, a native of Pisa, who had been taken, with thousands of his countrymen, in the battle of Meloria, he dictated to him the narrative of his travels, and lent the MS. to read to the current. After peace was made between Genoa and Venice, Marco Polo returned home. His father, Niccolo, was still living, but he died in 1316. Of the latter period of his son Marco's life little is known. He states that he returned to Venice and applied himself to correct and improve the text of his narrative, of which it appears that a French translation was made under his direction, and given by him to Thibald, lord of Cepry, who was appointed by Catherine of France, when that princess visited the court of Venice in 1316. Courtenay her vicar-general in the possessions which still remained to the Latins in the East. The work is entitled, 'Marco Polo, delle Meraviglie del Mondo da lui descritte; and in other copies, 'Delle Cose dei Tarti e dell' India Oriente,' which is also made use of in the work of Ramusio, in his 'Raccolta di Navigazioni e Viaggi,' 3 vols. fol., Venice, 1550-59. But the best edition of Marco Polo is that by Count Baldelli, 4 vols. 4to., Padua, 1757. Baldelli, who was a member of the Genoese 'Polovenesio,' with notes and illustrations, and a biography of Polo: it is also accompanied by a history of the intercourse between Europe and Asia in the middle ages, with the following title:—"Storia delle Relazioni Vicendevoli dell' Europa e dell' Asia dalla Decadencia di Roma fino alla Distruzione del Califfato." Count Baldelli has adopted as his text a MS. written by Micheile Ormanni, at the beginning of the fourteenth century, in Marco Polo's lifetime. Baldelli's work is illustrated by a map of Africa, drawn in 1351, and by another map with all the itineraries of the three Polo traced upon it. It is altogether a work of great research and very interesting. For a long time Polo was considered a liar and not worthy of confidence. But more accurate and elaborate investigations have demonstrated his veracity in relating what he saw himself. Klaproth, in several articles in the French 'Asiatic Journal,' has proved Polo's accuracy with regard to China. Polo's narrative was of great use to the navigators of the sixteenth century. He followed his track in the eastern parts of Asia, and the Chinese and Arabians which he brought home encouraged and assisted the Portuguese navigators in finding a passage under latitude 20° south of the Equator; and the great captain General de Magalhaens has published a translation of Marco Polo's narrative, accompanied by a commentary. Polo's account of the court of Kublai Khan gives us a much higher opinion of the social state of the Eastern Tartars in his time than is generally entertained. It appears that the Mongols had shared largely in the civilization of China, and had made considerable progress in the arts and sciences.

POLTAVA, or PULTAVA, is a government in European Russia, lying between 48° 48' and 51° 4' N. lat., and between 30° 23' and 36° 6' E. long. It is bounded on the north-west by Tscherningow, at the most northerly point by Kurak, on the north-east by the Slobode of the Ukraine, on the south-east by the Etchermay, and on the west by Kherson.

Kiev is impossible to state the area in a satisfactory manner; according to the estimates made in 1804, from the great map of Russia, it was 21,315 square miles; a smaller map and to Schubert, in 1835, it is 17,850 square miles; Wichmann makes it only 15,500 square miles: Schmidlin (1835) asserts that the first estimate is certainly too large, and we feel to present immense difficulties to the exactor; yet Hür- chielmann (1835) and the 'Weimar Almanack for 1840' give the largest estimate. The statements of the population are equally discordant. It appears to have been ascertained, in 1796, to amount to 1,356,726. Hassel, adding the probable annual increase during twenty-four years, gives 1,933,000 as the amount in 1820. Subsequent writers, at much later dates, make the amount less: thus Köpnen, in 1858, makes it only 1,621,000; but Schmidlin, in 1835, states that the population increased many thousands of souls; while Wichmann (1833) has 1,955,000; and the 'Weimar Almanack for 1840,' quoting Bulgariin, has 1,967,000.

Face of the Country; Soil; and Climate.—This government is one of the most extensive in the world, and is bounded by sea on a coast of some 1,400 miles, and by land on the south-east by the Etchermay, and on the west by Kiew, Kherson, and Ekaterinoslaw, and is everywhere navigable. Its chief tributaries are the Trubesch and the Sula, with the Udai coming from Tscherningow, the Piel, and the Dnieper, which forms for some distance the frontier towards Ekaterinoslaw. The Sula and Piel are navigable in the spring, are free from rocks, and flow through a rich country. There is no considerable lake in this government. The climate is mild; in winter however, when the cold north wind sweeps over the open plains, the cold is severe. The summer is very hot. Little rain falls in the summer.

Of all the provinces of Little Russia, Poltava is the most fertile and the best watered. The soil is so rich that it yields ample crops without manure, and it would produce much more if a better system of cultivation and a proper rotation of crops were adopted. The grains chiefly cultivated are millet, barley, and wheat; the roots are the Egyptian barley, and millet. The inhabitants cultivate also peas, lentils, rapsedoe, linseed, and tobacco. All kinds of vegetables known in Russia thrive, even the more delicate kinds, such as asparagus, artichokes, and cauliflowers; fruits of all kinds abound, but not of the best quality; from cherries, plums, melons, and berries of various kinds, liqueurs are manufactured, and excellent preserves made. The vine might thrive, if there were any mountains to afford protection against the cold north wind. The government is not wholly without forests, but the farther we go to the south-east the more bare is the country, and the eastern circles have hardly any wood but that of their fruit-trees.

The Dnieper the inhabitants use the reefs growing on its banks for thatch and for fuel; the interior they burn cow-dung and straw.

The steppes are covered with rich pastures, and the climate, says Hassel, is so favourable that the cattle remain in the open air all the year round. The soil is so fertile that the little known ox of the Ukraine attains its extraordinary size; horses are bred in great numbers; and the Russian sheep appear in large flocks. Within the last twenty-five or thirty years there has been an immense increase in the importation of Merinos; even previous to this, most of the manufacturers at Moscow were supplied with wool from the Ukraine. The breeding of swine is not much attended to; bees are common, and many farmers have a few hives. Common poultry is abundant; there are likewise blue Caspian or Chinese geese and Persian ducks.
and partridges are abundant, and, on the banks of the Dnieper, Nimrudian cedars (Arctes virgo), swans, pelicans, red ducks, water-hens, and snakes of all kinds. Though the Dnieper and other rivers abound in fish, the Russians consume so much in their numerous fish, that it is necessary to spare quantities. The Dnieper furnishes the Silarus Glansis, Linn., of the bladder of which glue is made, and the dried skin is used as a substitute for window-glass. The country is periodically infested by immense swarms of locusts; geese, ducks, and the flies of a kind called Shockey are quite abundant. There is potter's clay, brick clay, lime, chalk, and saltpetre.

Though this fruitful province is so well peopled, very few hands are employed in manufactures. The inhabitants in Judea are to be traced back to that land for their origin, and it is only of their fine liqueurs and preserved fruits that there is a surplus for exportation. The distilleries of brandy are considerable. The Sula and Psial are navigable only in the spring; the Dnieper only touches the frontier, and is scarcely navigable beyond the limits of the government on account of its canals. This want of inland communication lessens the value of the produce, and in former times the farmers frequently suffered their crops to be devoured by hogs for the want of roads for delivering them. A large communication has however taken place within the last twenty years, because Odessa draws a great part of its supplies from this government, the prosperity of which is progressively and rapidly increasing. There are great stores of grains, bread, pressed linseed oil, hemp, flax, tobacco, honey, wax, wool, tallow, butter, horses, oxen, preserved fruit, and liqueurs.

The most important trading towns are Poltawa, Kremenschtchuk, and Odessa. These are twenty-two villages in this government, of which fifteen are the capitals of the fifteen circles: but the number of villages is not known; they are however very numerous, and though, for want of timber, the buildings are mostly of clay, they are kept very clean, built within and straight, and the villages, being surrounded with orchards and gardens, have a very cheerful appearance.

The majority of the inhabitants are little Russians, mixed however with a considerable number of Great Russians, and some German colonists. At Kremenschtchuk there are some Greeks and Armenians, and a few Jews. The Greek clergy are under the bishop of Poltava and Pereiaslaw; there are, however, only twenty schools (including one gymnasium), with 110 masters and 1823 pupils, of whom only thirty-nine were girls. These must be added five schools, under the clergy, with 10 masters and 106 pupils; and for the gymnasium, one pupil out of 662 inhabitants. There is but one printing-office in the whole government.

The southern frontier was formerly defended by a chain of fortresses, garrisons, and thirty regiments, called the Line of the Ukraine, which extended from the Dnieper to the Donetz; but this defence being long since useless, the garrisons have been withdrawn, and the fortresses suffered to fall to ruins; of many of them not a trace remains.

Poltava, the capital of the government, is situated in 49° 30' N. lat. and 34° 15' E. long., near the confluence of the rivers Poltawka and Worskala. It is built of wood, but the streets are wide and straight, and in the centre there is a good square surrounded with stone houses, and in the middle of it a handsome monument, of granite, in honour of Peter the Great. It is surrounded by a rampart, and there was a fort called Schmidlin, a citadel in the centre, built on a small eminence. Schiemelmann however says there is, in the middle of the town, an earthen fort, with batteries. This town made a vigorous resistance to Charles XII., which led to the battle of Poltava, in which the Swedes were totally defeated, and Charles obliged to seek refuge in Turkey. A fine obelisk is erected on the field of battle, near which divine service is performed annually in commemoration of this victory. Poltava has ten churches (including a convent), a hospital, a gymnasium, and a school. The inhabitants, 10,000 in number, have considerable distilleries and tanneries, and carry on an extensive trade in the produce of the country. The town is surrounded with vast cherry-orchards, from the fruit of which a very strong ardent spirit is distilled. There are four annual fairs. In the vicinity there are extensive saltpetre works, and the village of Reschetlowska, celebrated for its fine breed of sheep.

The following are the other chief towns: Mirgorod, on the Khoral, has 7400 inhabitants, and holds great bazaars; Lubuyk, on the Sula, has 6000 inhabitants. Pereiaslaw, at the confluence of the Alta and the Trubesh, has a great trade in cattle and corn, and 8000 inhabitants. Kremenschtchuk, a town of the Dnieper, has a considerable trade and a wool-fair, and 8600 inhabitants. Its liqueurs and preserved fruits are very excellent. Ronny, or Romen, on the Sula, a small town, with not above 2000 inhabitants, is celebrated for its fish. The value of the trade is so great from the output, that goods to the amount of more than fifteen million of rubles are offered for sale.

(Hassel; Cambrai; Stein; Schmidt.)

POLYADPHIA, the name given by Linnæus to the eighteenth class of his sexual system. It was so named from πολλας, 'many,' and ἀδ χός, 'a brother,' in allusion to the stamens being collected into several panicels. In consequence however of the difficulty of distinguishing this point of structure in many cases, the class has been suppressed by some Linnaean botanists.

POLYANTHUS was the author of a work called Σπεραγωγία, or Σπεραγωγία (Strategems of War), in eight books.

A.D. Respecting the circumstances of his life we know nothing except what he himself tells us in the introduction to his work, which he dedicated to the emperors M. Aemilius and M. Lepidus. He says he was a native of Macedonia, and at an advanced age when he wrote his book. It contains an account of the various stratagems of war from the remotest times down to his own, and is a compilation made without any taste or judgment: it is however not confined to real stratagems, it contains sayings, apothegms, and many other things which are anything but what the title-page promises. But as the author collected his materials from sources which were not understood, or from cases, or even from fables, he has not been able to avoid the accident of a vast number of facts which would otherwise be unknown to us, though it is evident in many passages that Polyphantus must have misunderstood or misrepresented his authorities. His style is rhetorical, but notwithstanding its numerous solecisms and errors, it is better than that of many other writers of the same age. The first edition of Polyantus was published by Cassaubonius at Lyons, in 1569; another by Man Ivius, with a Latin translation, appeared at Leyden, in 1629, and at Frankfort, in 1626; and a third, with a French translation, was published by Marsinna, at Berlin, in 1736. The best edition however is that by Coras, Paris, 1689. Polyantus has been translated into English by K. Shepherd, and into German by Seyboldt, in 2 vols, Frankfort, 1753 and 1794.

POLYANDRIA, the name given by Linnæus to the fourteenth class of his sexual system. Although the name means literally many stamens or males, yet it is applied, in a restricted sense, to those plants only which have many stamens arising immediately from below the ovary.

POLYANTHES TUBERO'SA, or the Tuberosa (a corruption of Plante Tuberes), is a tuberous-rooted plant highly prized for the delightful fragrance of its flowers, on which account it is cultivated in the warmer parts of both the old and new world. Doubts are entertained regarding its native country. It appears to have been first seen in Southern Europe, by Clusius, whose description it; and the description of Gesnac, has been found in South Brazil, which is probably the origin of the garden plant.

The tuberose is too tender a plant to be cultivated in England in the open air, but in the south of Europe it flourishes so well as to be available to it; and it is the principal part of the European market with tubers for forcing. The latter are imported into this country by the Italian
oilmen, who sell them, with orange-trees, Narcissus roots, and similar products of the south. In selecting tubers for planting, the largest tubers should be preferred, as the smaller ones will often not flower. All offsets should be carefully picked off, so as to concentrate the vegetation in a single eye. They should be planted in the fall; never left him. The hotbed, with as much bottom heat as is given to a melon. The eye should be about an inch below the surface of the soil. Very little water should be given till the plants are grown from three to four plates not vigorous, and may be supplied copiously. An abundance of light and air should be given the plants as soon as they begin to grow, and this should be sedulously attended to as long as they remain in the hotbed; it will however soon be necessary, on account of the temperature in the hotbed, that the plants be placed near the glass, and their roots soil exposed to a temperature similar to that from which they were taken. As soon as they show their flowers, but not sooner, they are removed to the sitting-room, when their flowering will be completed.

POLYANTHUS, a garden variety of the oxlip primrose, with brown flowers, is one of those plants which have from time immemorial had favourites in gardens, and is a plant generally considered as being of as ancient origin, and is now propagated either by seeds or division of its root. Florists require that a good variety of this flower should possess a strong scone, a well-filled truss, a corolla with a short tube, a bright yellow eye, and a deep rich coloration to him, which he defined yellow edging. They require less careful cultivation than the auricula (AURICULA), and principally need shade and rich soil. Their beauty however diminishes with the increasing age, and the renewal of the variety from seeds is requisite every few years.

POLYANTHUS NARCISSEUS is the same as Narcissus tazetta. [NARCISSUS.] Polybius, the son of Lycorus, was born at Megalopolis in the Peloponnesus. The exact year of his birth is not stated by any good authority, and the account of Suidas, who places it in the reign of Ptolemaeus Euergetes (who died about 222 B.C.), is irreconcilable with what Polybius himself (xxv. 7) relates, that is, he declared the more luxurious of his ancestors, to have accompanied his father on an embassy to that king, he had not attained the legal age, which, according to Polybius himself, was thirty, previous to which the law did not allow any one to take part in public affairs. According to the statement of Suidas however, Polybius at this time would have been about 40 years old. Now the year in which the Achaeans intended to send him with his father to Egypt was 180 B.C.; and as at that time he had not attained the legal age, he was excluded from his parents' wishes to that expedition, supposing, with Casson, that he was born about 264 B.C., that at the time of the intended embassy he must have been about 25 years of age. He seems to have acquired the principal parts of his skill in the affairs of state, the Sibyl of Cumae foretold that the father was a distinguished general, and one of the heads of the Achaeans, and it is expressly mentioned that he enjoyed the practical training of Philopomen, the greatest general of the Achaeans. When Philopomen died, Polybius is said to have been one of those who carried the urn containing the ashes of the deceased to the grave. (Plut., Philop., c. 21.) During the war of the Romans against Perseus, king of Macedonia, he advised his countrymen to observe a strict neutrality; but when they determined to lend their assistance to the Romans, he was entrusted with the command of the cavalry (169 B.C.), and was sent as ambassador to the consul Q. Marcius, to declare that the Achaeans were ready to give their assistance as soon as might be required. (Polyb. i. 6. 6.) In the following year, when the two Ptolemies, kings of Egypt, asked the Achaeans for support against Antiochus, it was particularly stipulated that Polybius should be appointed commander of the horse, which shows that he had acquired a certain power in a military capacity. After the destruction of the kingdom of Macedonia, the Romans, not satisfied with having taken cruel vengeance on those Achaeans states, which they suspected were not friendly to their interests, made out a list of 1000 distinguished Achaeans, and sent them to be tried. But instead of being brought to trial, they were distributed among the towns of Italy. Polybius, who was one of the number, was more fortunate than his fellow-prisoners, for his genius and talents attracted the attention of Aminius Paulus, who made him the instructor of his two sons Fabius and Scipio. Those young men, who became greatly attached to him, requested and obtained permission from their father to bring Polybius to Rome. Polybius himself (xxvii. 9, 10) relates a charming anecdote of the tenderness which Scipio, the younger of the two brothers, shewed to him; and he adds that Scipio declared that Polybius was the most learned man in Italy, and that conversation to everything else. During his long stay at Rome, Polybius on several occasions exerted his influence in favour of his countrymen, and at length, in 130 B.C., he was appointed one of the three commissaries for the Greek prisoners permission to return home; but during the period of 17 years which had elapsed since their arrival in Italy, their number had been reduced to 300. Polybius seems to have accompanied them on their return, in order to watch over them, and not to lose the opportunity of to the Romans, whose power would be hopeless to resist; for an inscription of Sallust (v. 37) recorded the regret of the Achaeans at not having followed his wise advice, by which they would have escaped the catastrophe of their final political annihilation. Polybius soon returned to Rome, to accompany his friend Scipio on his military expeditions. It must have been he that urged Scipio to compose his book of writing his great historical work; and for this purpose he made more profound and extensive studies than any other ancient historian. He not only studied the Roman constitution, and searched the archives which were thrown open to him for that purpose, but travelled through unlim- ited Romans, but he undertook long journeys across the Alps into Gaul, Spain, and to the coasts of the Atlantic. It is not certain whether he made these journeys previous to the year 152 B.C. or after. In which undertaking, however, it seems probable that he may have availed himself of the opportunity of visiting Spain when Scipio went to that country as military tribune in 151 B.C. Five years later, when Scipio besieged and destroyed the Carthaginians, he was accompanied by Polybius, who seems to have taken an active part in the Roman army, for in an inscription quoted by Pausanias (viii. 30), he is called the ally of the Romans. Pini says that during the siege of Carthage, Polybius observed the Carthaginians, when he had been with them on his former journeys, he was provided with everything that could facilitate the accomplishment of his objects. Immediately after the destruction of Carthage (146 B.C.) he hastened to the Peloponnesus, where, with his uncle, began a war with the Romans had broken out. But he arrived too late: Corinth had already fallen, and all he could do for his unhappy country was to endeavour to obtain from the conquerors the mildest possible conditions of peace between Philopomen and Aratus, with whose memory the happiest associations of his countrymen were connected. After the Roman commissioners left Greece, in 145 B.C., he was appointed by them to regu- late the affairs of the country, but he was killed in an in- defatigable zeal he traversed the country, everywhere en- deavouring to restore peace and unity, and to introduce salutary regulations. His merit on this, as well as former occasions, was duly acknowledged and rewarded throughout Peloponnesus, and statues, with inscriptions recording his exertions on behalf of his country, were erected at Megalopolis, Acaeneum, Mantinea, Pallantium, Teges, and other places. Soon after he had settled the affairs of his country, he was made a vespasian of the Roman senate, according to Strabo, he visited in the reign of Ptolemy Physcon, who ascended the throne in the same year that Corinth was destroyed. The remaining years of his life he seems to have applied to the revision and completion of his historical work. But as we suppose, with Selwainhauer and others, that in the year 134 B.C, he again accompanied Scipio on his expedition against Numantia, for which however we have no direct authority, Cicero (v. Phil., v. 12) merely mentions a book of Polybius which he composed about the war against Numantia. The time of his death is uncertain, for the only information that has come down to us is the statement of Lucan (Macr., 2, 3), who says that Polybius, on returning from the expedition, fell from his horse, and was killed by the blow. Whether he died, it is not, at the age of 82. Supposing this statement to be correct, he must have died about the year 122 B.C.
threw of the kingdom of Macedonia, including the imme-
diate consequences of this event, that is, the pacification of
Rhodes, and the sending of the 10,000 Achaeans prisoners to
Italy. The second part began with the war in Spain against
the Celibrians and Vaeceans, and ended with the destruc-
tion of Carthage. It is evident from the circumstances (Niebuhr, *Hist. of Rome*, vol. iii., p. 49), and especially from
the manner in which Polybius (iii. 1-5) speaks of these
two divisions of his work, that they were written and pub-
lished at different times, and the author himself the form
of the latter part was written after the fall of
Corinth, and the former some years before that event.
The first two books are an introduction to the first divi-
sion of the work, and contain a sketch of the History of Rome,
from its origin to its destruction by the Romans. The
second division of the work, the principal object of which was to describe the fate of
Carthage and Greece, and the causes which led to it, was
likewise preceded by a kind of introduction, consisting of a
brief history of the interval between the overthrow of the
Macedonian kingdom and the events which led to the fall
of Carthage and Corinth. The great object of the history
of Polybius was to show how the Romans, with their ad-
mirable constitution and their unity of purpose, within a
short period gained the dominion over the greater part of the
known world. Thus, although the history of Rome formed,
as it were, the nucleus of his work, it was still essentially a
universal history, and the Romes a new state, under its
institutions, as it came in contact with the Romans, was treated
with equal attention. To enable the reader to form a clear
estimate of the contents of the whole work, we shall give a
description of what Polybius himself laid Polybius for it.
After giving an explanation of the causes of the
second Punic war, Polybius describes the invasion of Italy
by the Carthaginians, and how they brought the Roman
republic to the brink of destruction. The accuracy of his
description of the passage of Hannibal over the Alps has
been demonstrated, step by step, by General Melville. He
then proceeds to show how Philip, king of Macedonia,
after the end of his war against the *Bolians*, entered into
a close alliance with the Carthaginians, and how he,
'gave an account of the dispute between Antiochus
and Ptolemaeus Philopator, about Cela-Syria, and the war
which arose out of them; of the manner in which the
Rhodians, and Prussias, king of Bithynia, compelled the
Byzantines to cease paying the passage-money which they
had been accustomed to demand of those who sailed into
the Euxine. Here we shall break off our narrative, and
turn our attention to the Roman republic, and show that it
was by its internal consistence and strength, that it over-
came the union over the world. At the same time, we shall make
some digression to show how Hiero of Syracuse lost his inde-
pendence; next to which I shall describe the disturbances of
Egypt, and the death of Alexander, and how Philip formed an
alliance, with a view of dividing the kingdom of Egypt between them; how at first they acted insensibly, until at length Philip made open war on
Egypt and Samos, while Antiochus invaded Cela-Syria and
Phoenicia. After this, I propose to give a brief account
of what took place between the Romans and Carthaginians,
in Spain, Africa, and Sicily. This will lead me to Greece,
and after having related the maritime war of Attalus and the
Rhodians, as well as that of the Romans against
Philip, I shall describe the immediate consequences of these
events; the exasperation of the *Bolians*, by which they
were induced to call Antiochus to their assistance, which
was a war both with the Epirotes and the Achaeans and Romans. After having explained the causes of
this war, and the passage of Antiochus into Europe, I
shall describe, first, his flight from Europe; secondly, how
he was conquered by the Romans, and compelled to give up
all Asia west of Mount Taurus; and thirdly, in what man-
er the Romans, after the chastisement of the Galatians,
gained the undisputed sovereignty of Asia. After this
shall follow an account of the calamities of the *Bolians
and the Epirotes*, and of the war between them and the
Gallogrecians, and of that which they carried on with
Ariarathes against Pharnaces. Then, after having de-
scribed the union and the arrangements of the Peloponne-
sian confederacy, I shall subjoin a short recapitulation of my whole narra-
tive. Finally, I shall add an account of the expedition of
Antiochus Epiphanes into Egypt, of the war against Per-
seus, and the overthrow of the kingdom of Macedonia.
From the history of these events, says the historian, 'it will
be manifest how the Romans made themselves masters of
the whole world.' The second division of the history of Poly-
bius began with the war of the Romans against the Cel-
ubrians and Vaeceans, and ended with the destruction
of those of the Carthaginians against Massinissae; of Attalus
against Prusias; and how Ariarathes, king of Cappadocia,
after being driven out of his kingdom by Ophro-
exus, again obtained it; and how Seleucus, king
of Syria, lost his life and his kingdom. Then followed
the history of the affairs between Carthage and Rome, which
ended in the destruction of the former. The whole
work concluded with the history of the rebellion of the
Macedonians against Rome, and with the beginning of the
Lacedaemonians from the Achaeum league, which led to the
great catastrophe by which Greece was made a Roman
province. These were the chief heads; but the work was
concluded with episodes or dissertations on various sub-
jects, such as tactics (vi. 17-40), geography (xxxiv.), politi-
cial institutions, &c., which the author thought necessary to
insert, partly to render his narrative more intelligible, partly
to refute false opinions current among his countrymen.
Whatever we may think of these episodes, looking at the
whole work in an artifical point of view, we are indebted
to them for the soundest information on many subjects con-
ected with the history of antiquity, especially that of
Italy and Greece, and also to them for the soundest
of the Romans for their behaviour to him, still
he did not spare them wherever they deserved censure (see
especially ix. 10, and xvii. 18). The love of his country
was manifested in his principle next, to
those who endeavoured to draw it into the fatal conflict with
Rome. But the distinguishing character of his work is its
didactic and practical tendency (титровая пропаганда).
He did not write for the sake of amusement, or of filling
the memory of his reader with a number of unconnected facts,
but he traces events back to their causes, and deduces
from them the most useful precepts, much in the same way
as the so-called 'historiae raisonnees' of modern times,
whence we learn, among other things, how it is that he thus wishes to guide his reader, and not to allow him
to form his own opinions; but setting aside the considera-
tion that an intelligent reader may and will always judge
for himself upon the evidence of Polybius, Antiochus, and Pharnaces;
Antiochus, is full of the most profound political and military
wisdom; or, as a modern historian expresses it, 'a code of
the wiiest political and military maxims;' and enabling
the reader not only to understand the past, but to look upon
the future with the foreseeing eye of a prophet. As
the object of Polybius was not to make his work popular with
the multitude, but to instruct and guide men who are en-
trusted with the care of the destiny of the state, he abstained
from all rhetorical embellishments of style. He looked with
contempt upon the refined affectation and hollowness of the
rhetoricians of his time, for true public oratory had long
been discarded for what the Romans termed the 'maxims' of
speeches, though it still was and
remained a favourite custom with his countrymen down to
the latest period of their literature; but where he thinks it
necessary, he gives the learned sub divisions in his
own words. It is natural that under these circumstances the
rhetoricians of his own as well as of a later age should
have been unable to appreciate Polybius. (Niebuhr, *Hist. of Rome*, vol. i., p. 533.) Dionysius, though in many respects
a judicious critic, misjudged the character
of Polybius is written in such a style that no one can
dare to read it through from beginning to end. Polybius
has also been censured for having introduced into his work
rumors and speculations, the actual events of the Roman
 Wars; but the amount of these facts that have hitherto been collected are few, and some
of them are doubtful. We may however admit that there were
more of such expressions in those parts of his work which
nothing is known of it. His memoirs of the life of Philo-
ponem (x. 54) are also lost. It is however not improbable
that in the account with which this chapter
of Philoponem, we may still possess the substance of
those memoirs. Other works of Philoponem mentioned by
some of the ancients, on tactics and subjects of geography, were
probably not separate works, but dissertations which formed parts
of his History.

POLYBIUS. (Zool.) [PORTUMID.]

POLYBORUS. [FALCONID. Vol. x., p. 168.]

POLYBRANCHIATA. M. de Blainville’s name for his second
order of Parmarchophora. A group of the families Tetracerata and
Dicerata. The first of these families consists of the genera Gladius,
Laniogerous, Terripes, Cavolina, and Eulista; the second, of the genera
Tetragonites, Trionota, Tritonia, Langeacricha, and
Dracolopolis. N.B. Cavolina is erroneously referred to
Pelatomata, instead of the title which heads this article.

POLYBIUS, or POLYBIUS (ΡΟΠΒΙΟΣ), a pupil and son-in-law of Hippocrates, who lived
among the middle of the fifth century B.C., in the island of Cos. He
assisted Thessalus and Draco, the sons of Hippocrates, in
estabishing the ancient school of the Dogmatici, which
was also called the Hippocratic sect, from
its later resemblance to the opinions and
mode of practice of his father-in-law (Comment. in Hipp.
lib. i.; De Nat. Hom., p. 11, 12, ed. Kühn); but, as Pol
wrote to Polyarchus of Lemnos, it must be confessed
that having them copied to us here is only a mistake,
when he does in some instances differ from Hippocrates,
particular respecting the passage of liquids into the trachea
from the lungs. The extracts were generally
j. PHILOSOPH. (Anthrop.) printed among the works of Hippocrates, are supposed
to have been written by Polybius:—1, ἡ ψυχή; 'De Se-
nome; 2, ἡ φύσις ἀληθινή, 'De Naturali Pueri,' 3, ἡ ψυχή ἐνεργή, 'De
Salvatori Vicio Ratione; 4, τὰ ρήματα ἀνωτέρως, 'De
Affectionibus;' 5, 'De Internis Affectionibus.' (Choulant, Handbuch der
Bücherkunde für die Aeltere Medizin, &c., Leipzig, 1828, 8vo.)
Many persons also attribute to him the treatise ψηφίσις ἀνωτέρως, 'De
Naturae Hominis,' which is found among the works of Hippocrates; but, according to
Galen (locu cit.), incorrectly. He is several times mentioned
by Galen (Opera, ed. Kühn, tom. vii., p. 960; tom. xvii., p. 11,
175; tom. xvi., p. 9); his name occurs also in Celsus (De
(De Mobb. Acut. lib. iii., cap. 9); Pliny (Hist. Nat.
lib. xxxi., cap. ult. in fine); and Thessalus (in Orat. ad Athen.
edition was published by J. Placotamus (Brechtzneider). Antwerp, 1561,
12mo, and it is inserted in several editions of the 'Regimen
Sanitatis Salernitanum.' The whole of his 'Opuscula' were
published in a Latin translation by J. de Ferraris, and
written by Pietro Lauro, Venice, 1455, 4to.

POLYCARPUS, one of the fathers of the Christian
church, and one of a small number who were distinguished
from the rest by the term Apostolic Fathers, as having
been contemporaries of some of the Apostles. The period
of his death is well ascertained to have been in A.D. 167, in
the reign of Marcus Aurelius; the period of his birth is
placed perhaps somewhat too early when it is referred to
the reign of Nero. However there seems no reason to
doubt that he was contemporarily with Saint John, and
known to him, the lengthened period of whose life connects
so fortunately the men of the second century with those who
had been in personal attendance on our Saviour.
It is this circumstance which gives its chief importance
to the lives of these persons, and thence arises the main
value of the few and in other respects unimportant writ-
tings which remain of the Apostolic Fathers. The lives form
links in the chain of Christian tradition; and the writings
recognise by frequent quotations the writings which remain
of the evangelists and apostles.

By Drume, Polybius is considered as the author of only one small epistle
remains. It is addressed to the Philippian church, exhorting
them to the practice of their Christian duties and the
maintenance of the purity of the faith. But there is another
recent hypothesis, that of the writing of that epistle by
himself, or a companion of his, the parenthesis of the manner of his death, written by the church at Smyrna,
which he was the bishop, addressed to the church of
Philadelphia. It is valuable and interesting memorial. There seems to have been a mad and wicked attempt to extirpate Christianity in Asia Minor. The persecution raged with peculiar violence at Smyrna. Many Christians were delivered to the lions. Polycarp, the bishop, was reserved for a cruel death by being burnt at the stake. Both these epistles may be read in an English translation in a volume published by archbishop Waite containing all the genuine remains of the Apostolic Fathers.

What further is known of him is, that when the controversy began between the Eastern and Western churches respecting the proper time for the observance of Easter—a childish matter of disputation, which however produced much ill feeling for many centuries in the Christian church—Vitus went to Rome with Anicetus, the bishop, and other Christians there; and that while at Rome he strenuously opposed the heresies of Marcinus and Valentinus. This fact is stated by Irenæus, bishop of Lyons, who was a pupil of Polycarp.

POLYCHROME. [Cyclopaedia, vol. viii., p. 249.]

POLYCHROME, the colouring matter of saffron (Sâf'ran), which consists of the dried stigmas of the flower of the Crocus sativus. This substance was first examined in 1826 by Monardes, language and the name which it bears, on account of the variety of colours which it is susceptible of exhibiting. It is procured by infusing saffron in water, evaporating the solution to the consistence of a gum, and precipitating the residue in alcohol, and evaporating the solution to dryness.

The properties of polychrome are, that it has a very deep yellow colour; by exposure to the air it absorbs moisture, and becomes viscid. Water and alcohol dissolve it readily, but acids do not; the sun’s rays destroy the colour of the aequous solution of polychrome, and it cannot be restored. Sulphuric acid renders both the aqueous and alcoholic solution of polychrome of a deep indigo-blue colour, which gradually changes to lillac; nitric acid and gives them a green colour, which disappears on the addition of water; chlorine destroys the colour entirely. Lime-water precipitates a solution of polychrome, yellow; barytes-water, red; sulphate of iron, dark-brown; diacete of lead, saffron-coloured; nitrate of mercury, red; acetate of lead produces no change in it.

When strongly heated, polychrome is decomposed, and there are produced water containing an acid, a yellow-coloured oil and a darker one, carbonic acid, and carburized hydrogen; the charcoal remaining yields cyanogen when calculated with potash. Polychrome does not appear to have been analyzed.

POLYCHROMY, a modern term (from the Greek polychromos and χρώμα) used to express the antient practice of colouring statues and the exteriors of buildings. It is difficult to define exactly what the system of colouring was, but it appears from the remains of colour found upon antient monuments, that the ancient Grecian refinement both in the chromatic sculpture and architecture, the colouring was strictly confined to the ornamental parts; since no traces of colour have ever been found upon the naked in sculpture, or upon the walls of temples when marble.

There is scarcely any notice of the system or practice of colouring architecture in any of the antient writers. A few remarks occur in Vitruvius and Pausanias, which may be construed into an allusion to it, but they are vague, and the systems which have been laid down by several modern writers rest chiefly upon conjecture. It is more probable, where the architectural members were subject to so great a variety of forms and proportions, that the decorations in colour, which admit of endless variety, were quite arbitrary, and the limits of the system consisted only in the architectural members to which their application was restricted.

Remains of colour have been found by travellers upon monumental work in most of the architectural ruins of Greece. Many traces were discovered by Dodwell, Stuart, Chandler, Bröndsted, Semper, and others, upon the principal Athenian monuments: upon the temple of Theseus, the Parthenon, the Propylæa, the Erechtheum, the temple on the Acrocorinthus, the monument of Lycurgus, the outer propylæa of the temple of Ceres at Eleusinæ, and the greater temple at Rhæmin; also upon the temple of Apollo at Bassæ in Arcadia, the Doric ruins at Corinth, and the temple of Minerva at Pisa, and upon the temples of Scænus in Sicily, and upon the basilea of Pæstum.

Upon all these temples, except the Doric ruins at Corinth, and the temple of Minerva in Agrigæ (commonly called the temple of Zeus Panhellénios), which were not of marble, the colouring was confined to the mouldings and other ornaments, the friezes, the metopes, and the tympana of the pediments. The exterior of the wall of the cellæ of the Parthenon, and the temple of Minerva at Pisa, and the temple of Minerva at Scænus, were covered with a stucco and coloured red. In a ruder age, when most temples were constructed of wood, before the use of marble or other stone, the application of colours was undoubtedly more general and much less systematic, not only among the Greeks, but with most of the nations of antiquity. In Egypt it was at all times a universal custom to have recourse to colours in the decoration of architecture. In later times amongst the Romans, in the pediment, cornices, pilasters, and the suckers of the columns, the base, were also sometimes coloured. Faction, and the outlines of the leaves were engraved in the stone. The marbles, diadems, modillon, and the sufflets were also variously coloured, but that the pavement would necessarily be gilded. The facies of the architrave and the cornice of the cornice were left plain, but the Doric architrave was sometimes ornamented with gilded shields, as in the Parthenon at Athens, which were placed immediately beneath the metopes. It appears that a wall also which was decorated with sculpture were coloured, which was absolutely necessary to give the sculpture a proper relief; for the same reason the tympana of the pediments would also require colour. In the Doric order the tympanum would necessarily be of the same colour as the metopes: in the Parthenon they were of a pale blue; and in some of the Sicilian monuments red has been found. The metopes require colour, either without sculpture, to throw the weight of the pediment upon their surface, its natural tinge, which was a left plain, united the cornice with the architrave, and gave the whole building an elegant lightness of effect which it otherwise could not have.

Polychrome was quite as general amongst the Greeks as polychrome architecture; it is frequently alluded to by almost all the antient writers, and many statues of this kind are minutely described by Pausanias. The acrolith and the chryselephantine statues both come under the head. In the latter style were many of the most remarkable productions of antient art—the Jupiter at Olympia, and the Minerva at Athens, by Phidias; the Juno at Argos, by Polyclus, and the Asclepius at Epidauros, by Thrasymerides; and others described by Pliny. In the fourth period the Grecian art, custom seems also to have defined limits to this practice, for except in the rudest ages, the naked itself was never painted, although it appears to have been sometimes covered with an enameled varnish. That the naked marble of the works of the greatest sculptors was not coloured, we have most conclusive proofs from Lucian, in the dialogue between Tyclus and Polycrates. (De Imag. 5-10.) The colouring was confined to the lips, the eyes, the hair, the ears, and the ornament of the face, which, so far as the hair was often gilded, as in the case of the Venus de' Medici, and in many statues glass eyes were inserted with eyelashes of copper, examples of which are still extant.

Alluding to this practice, Pliny remarks, "It seems to have been common to most countries, particularly in the early and barbarous states of society. But whether we look on the idols of the South Seas, the Etruscan painted sculpture and ornament are still applied to monuments. But statues on tombs of the middle ages, we shall generally find the practice has been employed to enforce superstition, or
There were two sculptors or statuaries of Greece so called. They are noticed by Pliny and Pausanias, but in so undefined a manner that it is not always easy to distinguish which of the two artists is referred to. The first Polycles lived in the hundred and second Olympiad, or about 370 B.C., and was therefore contemporary with some of the greatest sculptors of antiquity, as Cephalodotus, Praxiteles, Leochares, and Lysippus. The second was an Athenian and the house of Polycles was continued in Athens for about 170 years after our era. He was the son of Timarchides, a statuary of Athens; but his master's name was Stadieus. (Paus. lib. vi. c. 4.)

The son of this Polycles is said of his brother Dionysius were carried to Rome with other fine monuments of Greek art. Pliny (Hist. Nat. xxxvi. 5) mentions that a statue of Juno, the joint production of these two sculptors, was placed in one of the principal sports of Octavia; and near it was a statue of Jupiter, also the work of the two sons of Timarchides. Polycles has been supposed, from a passage in Pliny, to be the author of the original statue of the Hermaphroditus from which the well-known existing representation—especially that usually called the Borghese Hermaphroditus, from its having belonged to that collection, though it is now in the Louvre—are copies. Pliny (xxxiv. 8) says, Polycles hermaphroditum solutum in situ fecit. This Polycles, the pupil or scholar of Stadieus, according to Pausanias (lib. vi. 4), made a statue of Amynatas, a pancratist, or conqueror in the games, which was preserved at Olympia. Some statues of the Muses were also executed by Polycles. Polycles left sons who followed their father's profession.

POLYCLITUS, one of the most celebrated statuaries of ancient Greece. This name has given rise to much discussion from the difficulty of determining how many artists were so called, and what works each produced. Pausanias (lib. vi. 6), speaking of a statue of a youth, says it was the work of Polycleitus the Argive; but, he adds, not he who made the statue of Polycleitus, and as it may be probably the case, that there were at least two Polycleiti, and that both were natives of or connected with Argos; it may also be assumed that they were living nearly at the same time. Pliny (Hist. Nat. xxxiv. 8) alludes to a Polycleitus Syriacus, attributing to him the works which gained for him the authorship of one of the greatest artists of antiquity. The above, added to the statement of Pausanias, leads to the conclusion either that there were three sculptors of the name, two Argives and one a Syriacus, or, as it may be probably the case, that there were but two, and that the Syriacian, the more celebrated, was also called Argive. The most important of his works, and more especially his 'Juno,' were at Argos, and it has been reasonably surmised that he may have been so far honoured by that people as to have the citizenship of Argos conferred upon him.

Polycleitus the Syriacian was the scholar of Ageladas of Argos; and lived about the eighty-fourth Olympiad—about 600 B.C. He was the pupil of the sculptors of the second Polycleitus, but, for the reasons before stated, it is not easy to appropriate them with any certainty. Among the chief works of Polycleitus may be mentioned the colossal statue of Juno which decorated the temple of Juno Stator at Argos, and which was considered in many respects to

**equal the finest productions of his contemporary and rival Phidias. It was chryselephantine, or composed of gold and ivory: all the naked parts being of ivory, while the precious metal was employed for the features, the draperies, and ornaments. The dimensions of this statue were less than those of the Olympian Jupiter which Phidias executed for the people of Elis, and of the Minerva of the Parthenon. The goddess was represented seated on her throne. In one hand she held a sceptre; in the other was a pomegranate. The emblems and ornaments, having reference to mythological subjects, were of the richest description and most elaborate workmanship. This, taking it altogether, was considered the greatest work of Polycleitus, but was hardly less celebrated for others of a less ambitious character. Amongst these were two statues of young men, one, called 'Diatumena,' fastening a band round his head, which was treated in the soft or delicate manner, the other, 'Doryphorus,' of a more manly character, 'vivitir, carries a lance. A group of two naked boys called 'Astragaliastites,' playing at a game called 'Talil' (with bones), is also celebrated; also some statues of Canoephora (female figures carrying baskets on their heads), an Amazon, as well as several statues of Athletes (conquerors in the public games), and others. The Canoephora were so much admired, that Cicero declares (in Ver. iv.) that strangers at Messene crowded to see them, and that they were even more admired than the master's than the ornament or attraction of the whole city. The estimation in which another of his works, the Diatumenos, was held, may be conceived from the statement of Pliny, that it was the greatest work to be seen in the city for the next one hundred talents. But of all the productions of this great master none has a greater claim to notice than that which, for its excellence, was called the Canon, or rule of art. This was a statue so perfect in its proportions that artists referred to it, and called it the 'Canon' of Polycleitus, the 'Lineamenta artis,' says Pliny (xxxiv. 8), 'ex eopetibus, velut a lege quidam.' Some have supposed that this figure was the Doryphorus; and the reason for this belief—and it is only one of several others, derived from an elegant celebrated statue recorded by the celebrated Lysippus, who, being asked from what master he had learned his art, replied, 'the Doryphorus of Polycleitus.' On the other hand, the manner in which Pliny expresses himself respecting the 'Canon,' would warrant the assumption that it may have been some work distinct from the Doryphorus: In some copies we read 'idem et Doryphorum vivitir, puerum fecit, et quem Canaara artifices vocant;' another edition gives the passage 'Diatumenos fecit mollarum iurem...; idem et Doryphorum vivitir puerum. Fecit et quem Canara,' &c.; showing at least that a difference of opinion has existed on the subject. It may fairly be questioned how far any single or particular artist can claim for him the production of such a work as that of different qualities and characters can be successfully executed; and it seems much more probable that the canon of Polycleitus, whether or not it was the Doryphorus, was intended for use with the Canon, or rule of art, or as a model for the study of certain characters. We think this is the interpretation that must be given to it by all practical artists. It is the highest praise to Polycleitus to say he was a worthy companion and rival of Phidias. On one occasion, when five of the most eminent artists of the day, Phidias being of the number, executed five statues in competition, that of Polycleitus was preferred. It is also said that he carried to perfection the Toreutic art which Phidias had left unfinished. When living, Phidias, Alcaneus, and the brightest names in the annals of art. There is an extensive list of the various admirable productions of Polycleitus. Some of these are unquestionably by the same master, the so-called Syriacian; some may be by the second Polycleitus, but, for the reasons before stated, it is not easy to appropriate them with any certainty. Among the chief works of Polycleitus may be mentioned the colossal statue of Juno which decorated the temple of Juno Stator at Argos, and which was considered in many respects to
Polycotyledonous plants are those which have more than two cotyledons. Instances of this occur in the Boraginaceae, Leptospermaceae, and Schizopetaleae; in the Boraginaceae, in the genus Anisakia, and especially in Coniferous plants. They are however regarded as analogous, in the latter case, to oval seed leaves, as compared with those which are opposite; and in the other instances they may be produced, by the division of the ordinary cotyledons into two or more lobes each. All such plants are referred to the Dicotyledonous type.

Polydorus, De Montfort's name for a genus of Helicidae. The shape of the shell resembles Canococla, and the nearly circular aperture is surrounded with obtuse tuber-
cular teeth. Mr. Swainson makes it a subgenus of Lucem-
nella, Sw., and places it in his second subfamily Lucernina. (Treatise on Malacology.) Example, Polydondes Impera-
tor.

Polydore Virgil [Virgil.]

Dioscorides (A.D. 40-90) speaks of several parts of North America, but the best is found in Virginia, having a rootstock, about the thickness of a quill, twisted, and generally branched, the roots being esteemed the most powerful part. The bark is of a dirty yellow colour; the odour disagreeable; the taste, at first, mucilaginous, then sweet, then acid, but at last acrid, causing an unpleasant feeling of permanent irritation in the throat. The powder of the root causes sneezing; it is also used in varnishes, of resin, asphaltum, and (polygallin), and the acrid principle (senechin, which, when isolated, is insoluble in water, but perfectly so when in its natural state of combination with the extractive matter of the root), insolubilis, and polygalate of iron and potassium, are very mucilage and tonic, powers, especially over all secreting organs, whether the skin, mucous membranes, or glands. By its irritating qualities it can act as an emetic, but it is rarely used except in copious. In some forms of indigestion, attended with inadequate secretion of saliva, it is, externally used, but it is permanently serviceable in the chronic ophthalmia of stru-
mosous children, as it promotes increased action of the glands. As a gargle, it is an efficacious remedy against the hoarseness so frequent among small children.

Polygamae are polygamous plants, with irregular flowers, a definite number of hypogynous stamens, arranged in two parishes; anthers opening by pores, and a single superior pistil, becoming a capsule, a drupe or cupule. In all Polygamae the corolla is regular, and composed of petals irregularly consolidated into the form of a keel, while the calyx has two of its lobes much larger than the others, and coloured like petals. The order contains no plants of any value, known to be the production of Polycotyledons exist by which the moderns can judge of the merit of this art.

In addition to his fame as a statuary, Polycletus has that of an able architect. One of the monuments of his skill in this art was a marble building erected at Epidauros, called the Tholus. Another was a theatre, erected within the pre-
cincts of the temple of Ascalapius, also at Epidauros. It was considered, according to Pausanias, superior, for its symmetry and beauty, to any theatre extant.

The second Polycletus (Argivos) was the brother and scholar of Naucicles. It is thought likely that this artist was the author of two celebrated statues described by Pau-
sanias, to Jupiter Phidias in Magnesia, and the Jupiter Milichius, a marble statue at Arges (Paus., lib. viii., 31, and ii., 20); as well as of some bronze tripod dedicated at Aegyrene. For further particulars re-
respecting the works produced by artists so called, the reader is referred to Pliny (Hist. Nat.), Pausanias, Ju-
nius, and Silig (Catalog. Artificum), Em. David, and other writers on ancient art.

An ancient Greek epigram alludes to Polycletus, a Thas-
ian; but there is no account of him among the artists of antiquity.

Polydactylea is the name given by M. Milie Edwards to a genus of small Brachycrustaceans, placed by him in his tribe Cystanid, which tribe, in his opinion, forms the passage between the Cancerides and Callipogones on the one hand, and the Ostracodens and the other. He places Polydactylea between Thia and Cystes. (Corystes, voi. viii.) Example, Polydactylus capuleiferus (Pilumno capuliferus, Lat.).

Polydonte, De Montfort's name for a genus of Holocercidae. The shape of the shell resembles Canococla, and the nearly circular aperture is surrounded with obtuse tuber-
cular teeth. Mr. Swainson makes it a subgenus of Lucem-
nella, Sw., and places it in his second subfamily Lucernina. (Treatise on Malacology.) Example, Polydonte Impera-
tor.
tory cilia; having no heart, but vessels extremely delicate (tenuis), reticulated, transparent, and deprived of proper movement; often rudimentary eyes, with red pigmentum, indicating a nervous system, which however is not apparent; mouth nude or surrounded by vibratory cilia, and communicating with several ventricles; the phalanx apparent, and generally ossified; no branchiae; organs of generation filiform, reticulated, and granular; no distinct male organ; gifted with power of reproduction by spontaneous division.

Legion 1. Ancentera.

Mouth communicating with several stomochial vessels; no anus, no intestinal tube.

Order 1. Nuda.

Body without envelope. Body enveloped. 

Section 1. Gymnica. 

Body not ciliated; mouth with or without cilia; no pseudo-pediform prolongations.

§ 1. Gymnica nuda. 

Fam. 1. Monadina. 

Form of the body constant, reproduction by simple transverse division.

A. Without tail. 

a. No eyes. 

* Mouth truncate, terminal and turned forwards in swimming.

† Individuals solitary. 

Genus Monas. 

‡ Individuals solitary when young, afterwards aggregated and again liberated.

Genus Vilia.

+++Individuals solitary when young, dividing crucially.

Genus Polygona. 

** Mouth direct, truncate, and turned different ways in the animal's movements.

Genus Dacococcus. 

*** Mouth oblique, without edges, and bilobate.

Genus Chilomontes. 

aa. One red eye.

Genus Microglena. 

b. With a tail.

Genus Bodo. 

bb. Body angular.

Genus Microcentrum. 

Fam. 2. Vibronina. 

Body elongate, constant in shape, dividing into many parts, mouth terminal?

A. Body filiform, cylindrical, bending itself in undulations.

Genus Vivrio. 

B. Body filiform, rigid, and rolling itself in spiral.

b. The spiral plane.

Genus Spiruclum. 

bb. The spiral helical. 

Genus Sprotideus.

C. Body oblong, fusiform, or filiform, neither undulated nor turned spirally.

Genus Bacterium. 

Fam. 3. Astasia.

Body elongated, becoming polymorphic by contraction, often cylindrical or fusiform, and spontaneously dividing itself in longitudinal or oblique direction.

A. No vestiges of eyes.

P. C, No. 1147.

Genus Astasia.

B. Distinct rudimentary eyes.

b. One eye.

* A tail.

Genus Euglena.

** No tail.

Genus Amblyphilus.

bb. Two eyes.

Genus Distigma. 

Section 2. Epithria.

Body ciliated; mouth ciliated or nude; no pseudo-pediform prolongations.

Epithria nuda. 

Epithria loricata. 

Fam. 4. Cycladina. 

A. Body with vibratory cilia.

B. Body deprived of cilia, but furnished with hairs, not vibratile.

Genus Pantotrichum. 

Genus Prototrichum.

E. Compound, or reproducing by internal division.

Genus Pandorina. 

Genus Chilomontes.

++ Tentaculated.

Genus Sphareosira. 

bb. With eyes.

Genus Eudorina.

Section 3. Pseudopodia.

Body furnished with variable pseudo-pediform prolongations.

Pseudopodia nuda. 

Pseudopodia loricata.

Fam. 5. Amabilia. 

Genus Amoeba. 

The envelope dividing with the animal.

A. Free, never fixed.

* 

* 

aa 

prismatic.

Gen. Bacillaria. 

aaa. United in bundles and not polymorphous, afterwards disunited.

Gen. Protobacillaria.

aaaa. United in a fan shape, without foot: cuirass thicker in front.

Gen. Euciliaria. 

B. Fixed when young, afterwards free.

b. Sessile.

Gen. Syndera. 

bb. Pedicellated, often dichotomous by ramification; body reduced below, cuirassiform.

Gen. Compsiforma. 

bbb. Pedicellated, often dichotomous; body contracted towards each extremity, subsurfusiform.

Gen. Cocomena. 

bbbb. Pedicellated, united in a fan shape, and often dichotomous.

Gen. Echinella. 

Fam. 5. Amecilia. 

Envelope undivided.

A. Envelope urceolata.

Gen. Diffugia.

B. Envelope scutiform.

Gen. Arcella.

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**POL**

**Legion 2. Enterodela.**

Mouth and anus distinct, opening into an intestine, round which are grouped the stomachal vesicles.

**Section 4. Anopisthia.**

Mouth and anus contiguous.

*Anopisthia nuda.*

Fam. 6. *Vorticellina.*

A. Body pedicellated, fixed, afterwards detached, becoming often dichotomous.

a. Pedicile simple or branch-ed, contracting into a spiral.

* Pedicile solid, the interior muscle indistinct.

Gen. *Vorticella.*

** Pedicile tubular, the interior muscle often distinct, becoming arbo-reant by the spontaneous divisions of the animal.

† Animalcula of the same group similar.

Gen. *Carcehium.*

++ Animalcula dissimilar in the same group.

Gen. *Zoeacladium.*

aa. Pedicile not contracting in spiral, rigid, with no interior tube.

Gen. *Boscisia.*

B. Body not pedicellated and free.

b. Cilium in a single crown.

Gen. *Trichidea.*

bb. Cilium in a spiral row conducting to the mouth.

Gen. *Stentor.*

**Section 5. Enantiotreta.**

Mouth and anus terminal and opposite, reproduction effected by transverse division.

*Enantiotreta nuda.*

Enantiotreta loricata.

Fam. 7. *Enchela.*

A. Mouth, terminal, direct, obtuse, generally ciliated; division of the body transverse.

a. Body not ciliated, nor with hairs.

* Simple.

Gen. *Bouchelys.*

** Double.

- Gen. *Dioma.*

aa. Body with vibratory cilium.

Gen. *Holophrys.*

aaa. Body with cilium not vibratory.

* Subglobular.

Gen. *Actinophrys.*

** Disciform.

Gen. *Trichidea.*

B. Mouth terminal, oblique, often blunted.

b. Body without cilium.

* No prolongation of the anterior part.

Gen. *Trichoda.*

** Anterior part prolonged into the form of head and neck.

Gen. *Lachrymaria.*

bb Body ciliated.

Gen. *Zeusophrys.*

**Section 6. Allotreta.**

Mouth and anus terminal and opposite, reproduction effected by longitudinal and transverse divisions.

*Allotreta nuda.*

Fam. 5. *Trachelina.*

Mouth inferior, anus terminal.

A. Mouth unarmed.

a. No circle of cilia in front.

* Upper lip or front elongate, cylindrical or depressed, prolonged into a narrow trumpet form.

Gen. *Trachelia.*

** Upper lip short, depressed, and dilated obliquely.

Gen. *Lorodes.*

*** Upper lip compressed, subarctinate, or turmid.

Gen. *Bursaria.*

aa. Front with a ring of cilia.

Gen. *Phialina.*

B. Mouth armed with hooks.

Gen. *Glaucoma.*

Fam. 5. *Ophryocerina.*

Anus inferior, mouth terminal.

Gen. *Ophryocerus.*

**Section 7. Katotreta.**

Mouth and anus not terminal, reproduction as in the preceding section.

*Katotreta nuda.*

Katotreta loricata.

Fam. 10. *Kolpoda.*

Body smooth or ciliated, unarmed.

A. No eyes.

a. A short retractile prosobecia.

* Body partially ciliated.

Gen. *Kolpoda.*

** Body ciliated obliquely all over.

Gen. *Paramacium.*

aa. No prosobecia.

* Front and tail contracted.

Gen. *Amphileptus.*

** Front oblong, tail contracted.

Gen. *Uroleptus.*

B. With eyes.

Gen. *Ophryoglena.*

Fam. 11. *Oxytrichina.*

Body ciliated and hairy, or armed with styles or straight spicles and hooks.

A. Body hairy, no styles or hooks.

Gen. *Oxytricha.*

B. Body with hooks and no styles.

Gen. *Urostyla.*

C. Body with styles and no hooks.

Gen. *Stylonichia.*

Fig. 1.
In illustration of these minute animals, we subjoin figures of Monas atomus as an example of the gastric structure of the Anetem, and of Leucophrys patula as an example of the Enterodela. The intestinal system of Leucophrys is also given separately. In each case marks the situation of the mouth, and that of the anus.

**Fig. 2.**

**Intestinal system of Leucophrys patula.**

**POLYGLOTTS** (πολυγλώττος, from πολύς, many, and γλώττα, a tongue), books in several languages. The application of the word is restricted to the Bible, which being a collection of books written by various persons, at various times, and on various subjects, is called Bible (books), and a Polyglott Bible is therefore called Bible Polyglott.

The idea of a Polyglott Bible seems to have been first conceived in the third century, by Origen, who spent many years of immense labour in forming the Old Testament into such a work. This is commonly called Biblia Hexapla, the Bible in six columns. The six columns consisted of 1, the Hebrew text; 2, the Hebrew in Greek characters; 3, the Greek version of Aquila; 4, the Greek version of Symmachus; 5, the Septuagint; 6, the Greek version of Theodotion. These six columns went through the work; but some portions were in eight columns and others in nine, and with reference to these portions it is called Octaplus and Enneapla. Considered apart from the Hebrew, and the Hebrew in Greek characters, it is called Tetrapla, the Bible in four columns. Though two languages only were used in the formation of this work, it might not improperly be called a Polyglott. It is to be lamented that, except in the Septuagint, only a few fragments of Origen's performance have come down to us. These were published by Montfaucon, in 2 vols., folio, Paris, 1714, under the title 'Hexaplorum Origins quae superant.' Among the moderns, Aldus Manutius first planned a Polyglott in Hebrew, Greek, and Latin; but he never printed more than one sheet, a copy of which, supposed to be the only one in existence, is in the royal library at Paris. Its date is 1501. Since that time various Polyglotts have been published, of which the principal are the following:

I. The Complutensian Polyglott. This was printed at Complutum, the Latin name of Alcala de Henares in Spain. It was begun in 1562, and finished in 1577, but it was not published before 1572. It was patronised by Cardinal Francis Ximenes [Cenneres], who employed seven learned men competent for the undertaking, and who magnificently defrayed the entire expense of its publication. This noble work was dedicated by its patron to Pope Leo X. It is in six volumes, folio. In the Old Testament each page consists of three columns, the left-hand page presenting the Hebrew, the Vulgate, and the Septuagint, and the right-hand the Septuagint, the Vulgate, and the Hebrew, with Hebrew primitives in the outer margin, and a superlinear Latin interpretation of the Septuagint. At the lower part of the page is a Chaldee paraphrase with a Latin interpretation, in two columns. In the New Testament each page has two columns, consisting of the Greek text and the Latin Vulgate with marginal references. The Greek Testament of this Polyglott is remarkable as being the first complete edition ever printed. Besides a variety of prefatory matter in the first volume, the whole of the sixth volume, with the concluding part of the fifth, consists of several distinct performances, making a large apparatus of elementary biblical literature. Of the Complutensian Polyglott 600 copies only were printed, and one is seldom met with except occasionally in public libraries.

II. The Antwerp Polyglott. This was printed by Christopher Plantin, at Antwerp, 1559-1572, in eight vols. folio. The editor was Arias Montanus, who had about sixty assistants. The work was published under the sanction of Philip II., king of Spain, who is reported to have defrayed its expenses, though some are of opinion that he repented the money to Plantin, and demanded its repayment in such a manner as to involve him in very great distress. The whole of the Complutensian Polyglott is comprised in this Antwerp, besides another Chaldee paraphrase as part of the Old Testament, a Syriac version of the New Testament, and the Latin translation of Santes Paginus, altered by the editor, Arias Montanus. The Old Testament is in four columns, two in each page, a Latin interpretation of the Septuagint forming one of the columns with a Chaldee paraphrase on the lower part of the left-hand page, and a Latin interpretation on that of the right. In the New Testament the versions are similarly arranged, Syriac being in place of the Hebrew, and the Latin version of Paginus answering to the Latin interpretation of the Septuagint. The types are bold and finely formed, and the paper is of a yellowish cast and of excellent quality. The sixth, seventh, and eighth volumes consist of lexicon, grammars, and other aids for understanding the contents of the preceding volumes. Of this Polyglott 500 copies only were printed, and the greater number of these were lost in being conveyed by sea to Spain, so that it is more rare than even its predecessor of Complutum.

III. The Parisian Polyglott. This was printed at Paris, by Antony Vitre, 1582-1645, in 10 vols. large folio. The editor was Guillaume le Jay, who at this time was a papist, but who on becoming a Protestant became associated with several learned associates, and he might have had the patronage of Cardinal Richelieu, but, refusing this favour and venturing to publish the work at his own expense, he brought ruin upon himself. This splendid performance contains all that is in the two preceding Polyglotts, with the addition of an Arabic version of the Old and New Testament, a Syriac version of the former, and the Samaritan Pentateuch. These additions however are made separately; so that, though the Parisian Polyglott contains portions of the Bible in seven languages, its pages do not exhibit at one view more than the Antwerp Polyglott. These ten volumes, in imperial folio, present attractions of the ordinary kind, and in this paper, though perhaps not so fine as that of the Antwerp Polyglott, is beautiful; the types are large, clear, and elegantly formed; the engraver's art moreover is appropriately displayed in furnishing occasional
embellishments; in a word, the Parisian Polyglot is alto-
gether as magnificent a work as can well be conceived.

IV. The London Polyglot. This was edited by the
learned Brian Walton, who became afterwards bishop of
Chester. It is in 6 vols. large, and was published by
the London Polyglot Society; the volumes came out in the following
order,—the first volume in September, 1654; the second
in July, 1655; the third in July, 1656; and the last three in
1657. 'And thus,' says Dr. Twells (Life of Pococke),
'abundancy for. firm foundations of this Polyglot, Bib-
the glory of that age, and of the English church and
nation, a work vastly exceeding all former attempts of that
kind, and that came so near perfection as to discourage all
future attempts. Portions of this Polyglot are printed
in seven languages, all open at one view. No one book
is given in nine languages; but nine languages are used in the
course of the work, namely, Hebrew, Chaldee, Samaritan,
Syriac, Arabic, Persian, Ethiopic, Greek, and Latin. A vast
body of introductory matter is in the first volume, and the
sixth is made up of various readings, critical remarks, &c.
Brian Walton was assisted by a number of men who formed
a constellation of oriental and general scholars, among
which perhaps have appeared together at no other period during
the whole history of our country. One of these men was
Dr. Edmund Castell, who published his 'Lexicon Hepta-
glotton' in 1669, 2 vols. folio. This is a lexicon of the seven
courses or usages occurring in the Polyglot Polyglot, and it
has grammars of all these languages prefixed. It
generally accompanies the Polyglot, which can hardly
be pronounced complete without it. Walton's work is by
no means inferior to the three chief Polyglots of the
age, but in point of solid usefulness to the biblical scholar it is
far beyond anyone of them. The eight volumes form an ex-
traordinary collection of aids for the study of the original
scriptures. As the London Polyglot is frequently found in
private libraries, a more minute description of its contents
appears to be unnecessary. Its history is recorded at length
in Archdeacon Tod's 'Memoirs of the Life and Writings of
the Right Rev. Brian Walton, D.D., lord bishop of Chichester
in London, 1821, a work which comprises also notices of all Walton's con-

V. Bagster's Polyglot. This work was published by the
enterprising bookseller by whose name it is known, in 1
vol. folio, London, 1662. The Old Testament is in eight
languages, and the New Testament in nine. Eight lan-
guages are exhibited at once upon opening the book.
The languages are Hebrew, Greek, English, Latin, German,
Italian, French, Spanish, and Syriac, the New Testament
being given on the right hand. Besides, are added the Samaritan
Pentateuch in Hebrew characters; the notes and readings of the Masorites; the chief
variations of the Vatican text of the Septuagint (which is fol-
lowed), and the Latin and Hexastichon or twopenny Auctorities
given by Graebe, Oxford; and of the Greek Testament the
whole of the selected various readings given by Griesebach
in his own edition of 1805. Prefixed to the work are fifty
pages of notes and parallels in Latin, by Bagster him-
self, upon the subjects of the bridge. The type are small, but clear and elegant, and the
paper is of excellent quality. The whole volume pres-
ents a very handsome appearance.

On the subject of Polyglot Bibles in general, the reader
will be gratified by consulting Horne's Introduction;
Butler's Horse Bible; Clarke's Bibliographical Dic-
tionary; Le Long's Bibliotheca Sacra, improved by
Mahan.

POLYGNOTUS, one of the most celebrated of the
ancient painters. He was a native of Thasos: son and pup-
il of Aglaophon, a painter of that island. Pliny merely says
that Polygnotus lived before the 90th Olympiad (xxxv. 9); but
from Plutarch's account of his friendship for Cimon
and love for Cimon's sister Elpinice (Plut. Cim, c. iv.),
the work probably that he flourished at Athens as
least as early as the 80th Olympiad (B.C. 460). Thasos
was reduced by the Athenians, after a war of three
years, in 485 B.C. by Little expedition. Polygnotus
died left his native country, and accompanied its conqueror
Cimon on his return to Athens. A story told by Plutarch
(Cim. c. xiv.) would represent Elpinice as no longer young
in the year 483; if so, it is not probable that she would have
retained sufficient beauty, at a later period, to be introduced
by the artist into his painting in the Paece. Polygnotus
obtained the rights of citizenship at Athens; how long he
continued to paint we have no means of knowing. Pliny
describes him as 'the first who painted women with trans-
parent drapery, and covered their heads with variegated
caps. He first began to open the mouth, and show the
teeth of his figures, and to give them an expression of
perfect human life, and of the senses.' (Plin. xxxv. 9.)
Polygnotus and Micon were the first artists who
employed the 'sil,' or yellow colour found in the Attic
silver mines. (Plin. xxxiii. 13.) The same painter used a
unique shade for his color, which was prepared from the
variegated caps. He first began to open the mouth, and show the
teeth of his figures, and to give them an expression of
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ten
POLYGON. [Regular Figures; Regular Solids.]

POLYGON and POLYHEDRON. The word polygon means figure of several angles, and polyhedron means solid of several faces: the first is used for a plane bounded by straight lines, the second for a solid bounded by planes. We have in a given circle a great number of both kinds of figures, reserving the particular consideration of those which have equal sides or equal faces for the articles Regular Figures and Regular Solids.

The elements of Euclid's definitions are those of convex polygons, and to a limited number of polyhedrons. The most general propositions with respect to polygons as polygons, that is, which are true whatever the number of sides may be, are as follows: they are either in the Elements, or immediately deducible from them.

1. The internal angles of a polygon of $n$ sides are together always equal to $n - 2$ pairs of right angles. See Rotation for the full meaning of this proposition.

2. When a figure of an even number of sides is inscribed in a circle, the sum of the first, third, fifth, &c. angles is equal to the sum of the second, fourth, sixth, &c. angles. But in a figure of an even number of sides is described about a circle, for angles read sides in the preceding property.

3. Any one side of a polygon is less than the sum of all the others.

The first-mentioned theorem remains true beyond the limits of Euclid's meaning, namely, as long as the figure of $n$ sides can in any way be divided into $n - 2$ triangles: that is, in fact, as long as no side of the figure crosses any other side. Thus the adjoining polygon of $n$ sides, being divided into 8 triangles, has the sum of all its angles equal to 16 right angles, four of these angles each being greater than two right angles.

To make a rule however which shall connect the angles of any polygon whatever, that is, of any figure, however irregular, in which a point returns by a straight line to the point from whence it set out, would be difficult in the ordinary way of measuring angles. On this subject see Stereography.

A polygon of $n$ sides or edges has one face, and $n$ angular points or corners: that is, the number of faces and corners together exceed the number of edges by 1. On one side of the polygon let another polygon be described: it is then obvious that the two polygons have two corners in common, but only one edge, or else three corners and two edges in common, or else four corners and three edges in common, &c. Hence, the number of new edges is added: or, since one face is added, the total number of faces and corners is increased by the same as the number of edges. The same may be proved of every new polygon. There are more sides in common with any of the old ones: and since at the outset the number of corners and faces exceeds the number of edges by 1, and since every alteration adds the same to both sides of this equation, it remains true throughout. Whence the following theorem: let any number of polygons, in the same plane or not, be so connected that each has one side or more in common with one or more of the others: call each polygon one face; each side, to how many polygons soever it may belong, one edge; and such angular point, no matter how many angles may be collected there, one corner: the number of faces and corners will always exceed the number of edges by one.

Let there be a solid polyhedron, and beginning from one given face, annex the others successively: the preceding theorem will remain true, as long as each face which is added adds one or more new edges. But it is obvious that when the polyhedron is completely finished, with the exception of the last face, the completion of the solid, by counting the number of edges or sides, the new solid is completely laid down in former faces. Hence, in every solid polyhedron, the number of faces and corners exceeds the number of edges by one.

Again, on a given face of a polyhedron as a base, let a second polyhedron be constructed, and on a given face of that a third, and so on, it being permitted to include several faces from different polyhedrons among the faces of the new one. In the part of one such polyhedron which belongs to the preceding ones, as already shown, the corners and faces exceed the number of edges by one; and the same also in the new portion. But since one new polyhedron is added at every step, the number of new faces and corners are the same as in the new edges and polyhedron. But at the beginning, counting one polyhedron, the faces and corners outnumber the edges and polyhedron by one (since the number of the edges by 2): and since both sides of the equation receive the same accession for every new polyhedron, it remains always true: that is, the total number of corners and faces in any system of polyhedrons, each of which has one or more faces in common with others, exceeds the total number of edges and polyhedrons by 1.

In every face of a polyhedron take any point, which for abbreviation we may call the centre of that face. Join the centre of each face with the centres of the adjoining faces: we have thus a new polyhedron, and the points may be so taken, that those lying in the faces which meet at any corner, shall all be in the same plane. The new polyhedron has obviously as many corners as the old one had faces; and as many faces as the old one had corners: the number of edges being the same in both: and if we call a corner triangular, quadrangular, &c., according as three, four, &c. angles meet there, the new solid has as many triangular, &c., faces as the old solid has triangular, &c., corners: and vice versa. These polyhedrons may be called conjugate to one another.

Thus there is a triangular tetrahedron (four-faced solid) with four triangular faces, consequently the conjugate solid is another tetrahedron of the same kind. The quadrangular hexahedron (of six four-sided faces) has 8 triangular corners: the conjugate solid has therefore 8 triangular faces, and six quadrangular corners (the triangular octahedron). The pentagonal decahedron (having 12 five-sided faces) has 20 triangular corners: the conjugate solid has therefore 20 triangular faces and 12 pentagonal corners (the triangular icosahedron). The solids mentioned in this paragraph may be made of equilateral and equiangular faces. [Regular Solids.]

Again, a solid can be formed with 14 quadrangular faces, having 5 triangular corners and 8 quadrangular ones: its conjugate solid has therefore 8 triangular and 6 quadrangular faces, with 14 quadrangular corners: the number of edges in both being $8 + 8 + 14 = 30$, or $28$.

Let $F_5, F_6, F_7, &c.$ be the number of triangular, quadrangular, pentagonal, &c. faces in a solid, and $C_3, C_4, C_5, &c.$ be the number of corners of the same, and $E$ be the number of edges, &c. corners. Let $C, F, C_1, \ldots$ be the total number of faces, corners, and edges: then we have

\[ F = F_5 + F_6 + F_7 + \ldots + (1) \]
\[ C = C_3 + C_4 + C_5 + \ldots + (2) \]

Again, since $3F_2 + 3F_5 = \ldots$ is the total number of sides of all the faces, before they are joined, and since the junction joins each with another, we have half the preceding for the number of edges, or

\[ 2E = 3F_2 + 3F_5 + \ldots + (3) \]
\[ 2E = 3C_2 + 4C_3 + 5C_4 + \ldots + (4) \]

But $F_5 + C_5 = E + 2$, whence we deduce

\[ 2E = 3C_2 + 4C_3 + 5C_4 + \ldots + (5) \]
\[ 2F = 4C_2 + 2C_3 + 3C_4 + \ldots + (6) \]

Hence $F_5 + F_5 + \ldots$ and $C_2 + C_2 + \ldots$ must be even numbers; for if these be subtracted from the even numbers $2C_2$ and $2F$, it will be seen that even numbers are left: or the number of odd-sided faces must be even, and also the number of odd-cornered corners. Moreover, the number of corners must be made up of $(1)$ a couple; $(2)$ half as many as there are odd-sided faces; $(3)$ for every quadrangle, $(4)$ for every polygon, and $(5)$ for every octagon, &c.; and the same will be true if we write faces for corners, and corners for faces.

Since every face has at least three sides, and every corner at least three angles, $2E$ cannot fall short of $3F$ nor of $3C$. Hence, neither of the numbers $E$, $F$, nor $C$ can be negative, that is, neither of the following can be negative:

\[ 3C_2 + 2C_3 + C_5 = 12 - C_2 - 2C_4 - 3C_6 - \ldots (7) \]
\[ 3F_2 + 2F_5 + F_8 = 12 - 2F_2 - 3F_5 - \ldots (8) \]

Hence it appears that there must be either triangular,
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quadrangular, or pentagonal faces, and either three-angled,
four-angled, or five-angled corners. Call these the essential

Hence the following readily follows
faces and corners.
If the essential faces be all triangles, there must be 4
at least; if all quadrangles, 6 at least ; if all pentagons, 12
If the no n essential
at least : and the same of the corners.
faces be all hexagons, or the non-essential corners sixangled, it would appear* that the minimum number of
essential faces and corners need not be increased, how many
hexagons soever, or six-angled corners, there may be.

pends on considerations foreign to the subject as usually
considered.

For the remarkable division of equal solids into symmeand unsymmetrically equal see Symmetrica!,: for
the more general view of the nature of polygons, suggested
by modern geometry, see Transversal: see also Triangle, Regular Figures and Regular Solids, Trigonometry, &c.
trically

we have 2 E = 3 C, or
be of sides not exceeding

If all the corners be tb:*ee- angled,
(8) vanishes. If then all the faces
six,

we have

3F,

+ 2F +F
4

5

=

12.

Similarly, if all the faces be triangular, and the corners
nowhere more than six-angled, we must have

3C3

+

2C4

+

C4 =

12.

follows that when all the corners are threeangled, and all the faces either pentagons or hexagons, the
number of pentagons can be neither more nor less than 12
also that when all the faces are triangles, and all the corners

Hence

five

it

angled or six-angled, the

number

of five-angled corners

can be neither more nor less than 12.
If all the corners be four-angled, we have

F, = 8
whence there must be

2E=4C,

or

+ F + 2F,+
ft

And similarly,
at least 8 triangles.
the sides be quadrangular, there must be at least 8
three- angled corners.
5C, or
If all the corners be five-angled, we have 2E

•

if all

m

•

=

F,= 20 + 2F4 + 5F4 + 8F6 + ....

•
I

so that there must be at least 20 triangular faces. Similarly
if all the faces be pentagonal, there must be at least 20
three-angled corners.
Some of the most obvious ways in which figures may be
put together so as to enclose space are as follows :
This in1. Two n-sided faces, joined by n quadrangles.
cludes the prism and truncated pyramid, and also every

b

c

d

e

f

To

explain the meaning of the term polygonal number
[Numbers, Appellations of], let us take as an instance
the pentagonal number.
quadrangular hexahedron.
Take any pentagon BA6, and
construct a set of pentagons, ACc, Aud, &c. double, treble,
2. The pyramid, with one n-sided face and n triangles.
&c. of ABA in linear dimension. Divide the sides of each pen3. The solid with n quadrangles, and In triangles, the
symmetrical case of which is a prism surmounted at each tagon into parts, each equal to the corresponding side of AB6.
Then if we begin with A, which is one point, and afterward*
end by a pyramid.
being take in all the points of the first pentagon, we have I +4, or
4. Two faces of n sides, and mn quadrangles,
5 points. If we now add all the additional points of the
any whole number.
second pentagon (including subdivision-points), we have
5. Twelve quadrangles so arranged that four of them are
placed corner to corner, the figure being finished by four 1+4+7 or 12 points. Take in the next pentagon, and me
others on each side. When the quadrangles are all equi- have 1+4+7+10, or 22 points.
Hence the series 1, 5, 12,
22, &c. is called the series of pentagonal numbers ; and a
lateral, this is the rhombic dodecahedron.
set of numbers is thus pointed out which may be as justly
6. The pentagonal dodecahedron, in which there are two
may be called
pentagons, each of which has another pentagon on every called pentagonal as the set 1, 4, 9,
It must be supposed that the various sets of polyside, trie two figures being placed together so that the pro- square.
jecting angles of the one fill up the re-entering angles of gonal numbers were suggested by the square numbets.
[Numbers, Appellathe other.
tions OF.]
7. The triangular icosahedron, the conjugate solid of the
POLYGONA'CE^E are apetalous plants with triangular
last, which may be thus imagined. Let a pentagonal prism
be surmounted at each extremity by a pyramid, and let the fruit and usually with stipules united into a tube or ocrea,
sides of the prism which join the angles of the opposite pen- through which the stem passes.
Their fruit is evidently
tagons, and also a diagonal in each quadrangle, be supposed composed of three aspermous carpellary leaves joined by their
Turn edges, and surrounding a single erect ovule deriving its
to be formed of extensible and contractible threads.
one of the surmounting pyramids partly round : then the origin from a central placenta ; and it proves in a striking
sides and diagonals of the five quadrangles will no longer manner the truth of the modern theory, that in many case*
continue in the same plane, but will form ten triangles, the ovules derive their origin immediately from the centre
which, with the ten belonging to the pyramids, complete of vegetation, or the growing point, and not from the margin of carpellary leaves. The order consists of herbaceous
the number required.
When the sides of a polygon are given, the polygon itself plants more frequently than of shrubs, and a large part of
thus there is an infinite them are mere weeds ; as for example our docks, and wild
is not given, unless it be a triangle
number of quadrangles which have the same four sides. polygonums; some however* are handsome flowers, as the
But it is very remarkable that when a solid is formed of Polygonum Orientate, or Garden Persicaria, and P. ampUxigiven faces, in a given order of juxtaposition, those faces, if caule; others are valuable for cooking, as the rhubarb,
they form a solid at all, can only form one. This is the whose roots also furnish the important tonic and purgative
reason of the stability of solid figures ; were it not for this, drug of that name, and in some a great quantity of astringent
a box, for example, would require internal cross-pieces to matter is found, as in the Coccolooa uvi/era, or seaside grape
support the sides. This remarkable property is assumed of Jamaica, from which a kind of Kino has been prepared.
species of Indian polygonum, called tine tor turn, has
by Euclid as a part of a definition, and that improperly;
recently been introduced into cultivation in Belgium as a
since it is a new axiom.
A proof of the axiom implied in the above was given by substitute for indigo. The flour of the seeds of Fo4y
M. Cauchy in the article already cited, and will be found in fonum tatartcum,fagopyrum, and others, is made into a bad
ind of bread in Lombardy and other countries.
the notes to Legendie's Geometry. It is sufficient, but de(Zoology), Schumacher's name for a
• Remember however U»at this subject U very incompletely known and genus composed of those species
of Turbiuelhit of authors
cowHUons
can
be
laid
down,
it has never been fouud
though nom»' neceasnry
with large continuous ribs, so that they look like shells with
oat what oonditiuus are both necessary auit sufficient in order that a given
many angles or sides. Type, Turbinellus polygonum
number of faces may enclose space.

m

&c

POLYGONAL NUMBERS.

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POLY'GONUM

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POLYGNOMON BISTORTA (Great Bistort, or Snake-weed). Bistort is an indigenous perennial plant, growing in woods and meadows. The root, which is the official part, is about the thickness of a finger, round or flattish, and much twisted, like the coils of a snake, externally dark brown, within red and fleshy. When dried, it has no smell, but a very unpleasant taste. Roots of plants a few years old should be taken up in spring or autumn. It contains chiefly of tannin, gallic acid, starch, and oxalate of lime. It was formerly given in diseases of debility accompanied with languishing or mucous discharges, and likewise in the cure of which it may be combined with gentian, or sweet flag-root. It is to be regretted that an indigenous remedy of such power has fallen into neglect.

POLYGYRA, a genus of Helicidae with the shell completely discoid; no pillar; the aperture angulated and margined, and a small tooth on the inner lip.

Mr. Swainson, whose description this is, makes Polygys a subgenus of Liscocella. (Treatises on Malacology.)

Example, Polygyra septemcostata (Sow., 'Conch. Man.' fig. 383.)


In the flame of a candle it melts into an opaque globule; it is soluble in water, and the solution has a saline and bitter taste.

It is found at Salzburg and also at Ischel in Upper Austria.

Analysis by Stromeyer:

<table>
<thead>
<tr>
<th>Substance</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulphate of lime</td>
<td>44.74</td>
</tr>
<tr>
<td>Sulphate of potash</td>
<td>27.70</td>
</tr>
<tr>
<td>Sulphate of magnesium</td>
<td>20.04</td>
</tr>
<tr>
<td>Chloride of sodium</td>
<td>0.19</td>
</tr>
<tr>
<td>Peroxide of iron</td>
<td>0.34</td>
</tr>
<tr>
<td>Water</td>
<td>5.95</td>
</tr>
</tbody>
</table>

POLYHEDRON. [POLYGON AND POLYHEDRON.]

POLYHISTOR, ALEXANDER, a native of Corfinum in Phrygia, according to some, and of Mileus according to others, was a geographer and historian, who lived in the seventh century of Rome, and was taken prisoner by the Persians. Being purchased by Cornelius Lentulus, he was entrusted by him with the education of his children, and at last received his freedom. He then assumed the name of Cornelius, after that of his patron, and built a house at Laurentum, which having taken fire while he was there, he perished in the flames. He is often mentioned andquoted by Pline the Elder, Diogenes Laertius, Clemens Alexandrinus, and Eusebius, as a man of very extensive learning, in consequence of which he was styled Polyhistor. He wrote a work in forty books, each book being the description of a distinct country. Stephanus Byzantinus mentions his account of Bithynia, Caria, Phaphigonia, Syria, Libya, Cretica, and other countries. Clemens Alexandrinus quotes his treatise on the Jews, of which Eusebius has inserted fragments in his 'Chronography.' Clemens Alexandrinus mentions another work of Polyhistor, on the 'Symbol of Pythagoras,' and Cyril of Alexandria, in his work against Julian, quotes his authority on the early history of the world. Unfortunately none of Polyhistor's works have come down to us.

Polyhistor is also the title of a work on geography by Solinus. [POLYHISTOR, ALEXANDER.]

POLY'LEPA. M. de Blainville's name for the genus Scalpellum of authors. [CRIPPELA, vol. vi., p. 268.]


Before the blow-pipe, infusible; acted upon by sulphuric acid, when reduced to fine powder.

It is found in imbedded crystals at Fredersikven in Norway.

Analysis by Berzelius:—

<table>
<thead>
<tr>
<th>Substance</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Titanic acid</td>
<td>4.3</td>
</tr>
<tr>
<td>Oxide of iron</td>
<td>12.2</td>
</tr>
<tr>
<td>Oxide of cerium</td>
<td>5.0</td>
</tr>
<tr>
<td>Oxide of manganus</td>
<td>2.7</td>
</tr>
<tr>
<td>Zirconia</td>
<td>14.4</td>
</tr>
<tr>
<td>Ytria</td>
<td>5.8</td>
</tr>
<tr>
<td>Lime</td>
<td>4.2</td>
</tr>
<tr>
<td>Magnesia, potash, silice, and oxide of tin</td>
<td>traces</td>
</tr>
</tbody>
</table>

POLY'GON. [Sulphate of lime; Sulphate of potash; Sulphate of magnesium; Chloride of sodium; Peroxide of iron; Water.]

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POLYMORPHINA. [FORAMINIFERA, vol. x., p. 348.]

POLY'NEUMUS, a genus of fishes, placed by Cuvier in his third division of the Percidæ, the species of which are distinguished by the peculiar form of the fin, higher in the middle than the pectorals. These fishes are further distinguished by having several long filaments beneath the pectoral fin; these are, in fact, free rays of that fin: their teeth are minute and dense as the pile on velvet, or recurved like the teeth in a carding-machine; they are found on both jaws, as well as on the vomer and palate. The general form of the body of the Polyemus somewhat resembles that of the perch; the muzzle projects over the mouth; the eyes are rather large and placed very forward; the dorsal fins are short and widely separated, and the caudal fin is large, and more or less forked. The scales extend on the fins, as in many of the Scianidæ, which these fishes appear to approach in some of their characters.

Considerable interest is attached to the Polyemus on account of some recent discoveries, which tend to show that they produce isinglass in considerable abundance.

The attention of the members of the Zoological Society was first directed to this subject by Dr. Cantor. In the December number (1828) of Parbury's "Oriental Herald," says this naturalist, "appears a letter on the Sulheas fish of Bengal, and the isinglass it affords." Dr. Cantor says further, this anonymous writer, when at its full size, attains about four feet in length, and is equaliform, resembling the shark species in appearance, but exhibiting a more delicate structure. The meat of this fish, when converted by the natives, when salted and spiced, into 'burlah,' a piquant relish, well known at the breakfast-tables of Bengal. The bladder of the Sulheas may be considered the most valuable part of it; this, when exposed to the sun and suffered to dry, becomes perfectly hard, so hard, that it will repel the edge of a sharp knife when applied to it. These bladders vary from half a pound to three-quarters of a pound avoidopious in weight when perfectly dry. They are produced in the Channel Creek, off Calcutta, and in the oyster, or mouths, of all the rivers which intersect the Sunderbuns, and are exceedingly plentiful in certain seasons.

The discovery of isinglass as a product of India was so important, that Dr. Cantor determined to investigate the subject, and to ascertain, if possible, what the Sulheas might be; when, quite unexpectedly, he received a letter from Mr. McClelland, in which that naturalist stated that he had examined this fish, and found it to be the Polyemus Sole of Hamilton's 'Fishes of the Ganges:' moreover discovered that an individual of that species weighing two pounds would yield sixty-five grains of pure isinglass, an article which in India sells at sixteen rupees (18.5d.) per pound.

Thinking it highly probable that other species of Polyemus besides the P. Sole will yield isinglass, Dr. Cantor proceeded to give a more accurate account of those species which came under his observation while attached as surgeon to the Honourable Company's Survey of the sea-face of the Ganges delta.

The species best known, says the author, is the Polyemus Risus of Hamilton ('Pol. longifish; Cuvier; the Tupase, or Mango Fish, of the Anglo-Indians): this inhabits the Bay of Bengal and the estuaries of the Ganges, but enters the mouths of the rivers from the high upland of Calcutta during the breeding season (April and May), when the fish is considered in its highest perfection, and is generally sought as a great delicacy. This species is the smallest, for its length seldom exceeds eight or nine inches, and the half or two inches in depth. It is remarkable for the great length of its filaments, or free rays, of the pectoral fins, these being about twice the length of the body, and seven

* See the 'Proceedings of the Zoological Society' for July, 1859.
in number on each side. *Polynemus curvis* and *P. Topumii* of Hamilton, Dr. Cantor states, are closely allied to this species. *Polynemus Sele*, Hamilton (*P. plebeius, Broussoneti*; *P. lineatus, Lacépéde*), is the Sulean fish mentioned in Parbury's "Oriental Herald," the same which Mr. McClelland submitted to examination. This species, as well as another closely allied to *P. quadrifilis*, Cuvier, which I have dissected, figured, and described, under the name of *P. Saltath* (Saccoti), appears to be equally plentiful, in shoals, all the year round, in the maturities of the Ganges, and is appreciated by Europeans for its excellent flavour: both species attain a size from three to four feet in length, and eight to ten inches in depth.

Besides these species found on the coast of the mainland, two other species of *Polynemus*, *P. hexanemus* and *P. heptadactylus*, have been discovered off the coast of Java. On the coast of Africa and in the West Indies, certain species of the present genus are found. One of the African species is confounded by Cuvier with the Indian *P. longifilis*, and the mistake has been rectified by Mr. Bennett.† It appears that this species (which is in all probability the *Pentamenus* of Artedi, on which Linneaus established his *Pol. quinquarius*) differs from the Mango-fish of India in the number of free rays to the pectoral fins, the latter having seven rays, and the African species only five. MM. Cuvier and Valenciennes, not having found any species of *Polynemus* with so few as five free rays, and those longer than the body, imagined that the *Pol. quinquarius* was founded on a mutilated specimen. Several individuals however having this character being discovered by Captain Belcher, R.N., during his survey of a part of the Atlantic coast of North Africa, Mr. Bennett proposed to name the species after Artedi.

Polynemus Artedi. The second African species belongs to that section in which the free rays of the pectoral fins are short, and has received the name of *Polynemus quadrifilis*.

*Polynemus quadrifilis*, Cuv. et Va.

In the American *Polynemus* (*P. Americana*) there are seven free rays to the pectoral fin, and these scarcely reach the tip of the ventral fins: it is about one foot in length, of a silvery colour; the pectoral fins are almost black, and the other fins are spotted with black.

Polynesia, a word formed from the Greek, and signifying "many islands," is a term which has not long been used in zoology. When the inhabitants of the whole oceanic globe dispersed over the Pacific, and the whole extent of what now is called Australia, became known, geographers felt the necessity of separating both from Asia, and of giving them a distinct description, and accordingly they sought for an appropriate name. The English geographers adopted that of Australasia, the German Australia, and the French Polynesia. Under this name the French geographers comprehended not only the several groups of islands which occur in the Pacific Ocean, but also added to them all the islands east of the Bay of Bengal, or those which are commonly called the Indian Archipelago. But as those islands had always been considered an appurtenance of Asia, the name of Polynesia in this extent of signification, was not approved of, and it fell into disuse; and as it was not thought convenient to unite the great island of Australia with the other groups of the Pacific, the name of Polynesia has in modern times been restricted to those islands of the great ocean which are to the east of the Philippines, Moluccas, and Australia, and extend to the western coast of America. A few groups however, which are situated not far from the American continent, and therefore are considered part of that continent, as, for instance, the Galapagos, and the Revillagigedo Islands, as well as the islands constituting the empire of Japan, the island of Formosa, and the Kurules, are excluded from this term. For these reasons, we merely enumerate a large number of the groups of smaller islands comprehended under the name of Polynesia, as a more particular notice of them is given under their separate heads. South of the equator are the *Papua*, the Admiralty Islands, New Ireland, with New Hanover, New Britain, Louisiade, New Georgia Archipelago, Queen Charlotte Islands, New Hebrides, New Caledonia, Vitia Islands, Friendly Islands, Navigator's Islands, Society Islands, Marquesas Islands, Pamuto Islands, and the isolated Easter Island; south to which are to be added the Society Islands in tropical, Pitcairn's Island, Norfolk Island, and the islands of New Zealand. North of the equator are the *Polew Islands*, the *New Philippians*, the Ladrones, the *Ralic*, the *Radack*, and the Sandwich Islands.

Polynomial. An algebraical word meaning an expression which has several terms, being the general term under which are included, binomials, trinomials, quadrinomials, &c., or expressions of two, three, four, &c. terms. The polynomial theorem means the theorem by which the polynomial expression is raised to its several powers. For an easy way of doing this, see *Library of Useful Knowledge*, 'Diff. Calc.,” pp. 328-337.

Polyodontai ('many-toothed tribe'), a name applied by Lamarck and M. de Blainville to the *Arcoceae* of the former, the *Ark-shells*, &c. of collectors, comprehending the forms collected by Linneaus, in his 'Systema Naturae,' under the genus *Arca*, and now designated by more modern zoologists as the genera *Arca*, *Cucullia*, *Pectunculus*, and *Nucula*.

Lamarck's *Arcacea* constitute a part of his *Conchiferae Temnepiderae*, and are arranged by him between the *Cardiacea* and the *Trigontae*.

De Blainville places his family *Polyodontai* or *Arcacea* between the *Mytilaceae* and *Submytilaceae*.

Lamarck thus defines the family:—

"Cardinal teeth small, numerous, entering, and disposed in each valve in either a straight, a curved, or a broken line."

M. Deshayes remarks, in the last edition of *Lamarck*, that the greater number of conchologists consider the family to be very natural, and not requiring any alteration, the relationship between the genera being well shown, especially between *Cucullia*, *Arca*, and *Pectunculus*; whilst the differences existing between them are of so little importance that their union under one natural genus may be well adopted. *Nucula* indeed does not appear to M. Deshayes to be so well connected with the preceding genera; for the *Nuculae* are scarce, a condition not observed in the others. The hinge teeth of the *Nuculae* have a different form, and they are in general more wavy than the *Arca* and *Pectunculi*; the position of their ligament distinguishes them still further. In the three preceding genera the ligament is external, and rolled up, as it were, behind the hinge; in the *Nuculae* it is internal, and received into a
small spoon shaped cavity placed in the angle formed by the cardinal hinge. It is true, says M. Deshayes, in continuation, that among the *Nuculae* are comprehended many species in which the ligament is external as in the *Pectunculus*; and he has noticed this in some species it is that may be convenient to withdraw these species from the genus *Nucula*, to place them among the *Arcæ* and the *Pectunculus*, and thus separate them from the family of the *Arcæ*, which family would be then well characterised by the position of the ligament and the nature of the hinge. He further, with reference to the figure published by M. Quoy, in the *Voyage de l' Astrolabe*, of the animal of a *Nucula* which he placed among a *Trigonia*, acknowledges that there is no denying that more analogy exists between them than had been at first supposed; but he also says that it is necessary to remark that the animal of the *Nucula* represented belongs to a species which has an external ligament, and which by that very organisation approaches the *Trigonia* more than the others.

M. Rang makes the *Arcæ* consist of the genera *Cucullæ*, *Arca*, *Pectunculus*, *Nucula*, and *Trigonia*, and gives the following as the character of the family:

**Animal** having the mantle entirely open throughout its circumference, excepting towards the back, without tubes or any particular apertures, and partially adherent; sometimes prolonged backwards; the foot always very considerable.

**Shell** generally thick, regular, equivalse, inequilateral, with a similar hinge in each valve always formed of serial teeth, which are often lamellar, fitting into each other, straight or oblique; muscular impressions nearly always united by a pallial impression, which is very narrow, and parallel to the border of the shell.

In this article we shall confine ourselves to the genera *Cucullæ*, *Arca*, *Pectunculus*, and *Nucula*. *Trigonia* will be treated of under *Eugonia*.

**Cucullæ. (Lam.)**

**Generic Character.**—*Animal* very thick, having the mantle a little prolonged backwards, and bordered by an irregular row of tentacular filaments; labial appendages small and triangular; foot large, pedunculated, compressed, and slit longitudinally.

**Shell** thick, regular, equivalse, inequilateral, ventricose, with distant umbones; hinge linear, straight, formed of small transverse teeth for the greatest part of its length, and of many other teeth or longitudinal ribs; ligament entirely external; anterior muscular impression forming a projection with an angular or auriculate border. (Rang.)

M. Deshayes remarks that the *Cucullæ* differ but little from the *Arca*, and although they have a particular form, there are some species of the latter-genus which establish the passage between the two genera. He observes that what most essentially distinguishes the *Cucullæ* from the *Arca*, are the transverse ribs placed at the extremities of the hinge, which ribs articulate together like the teeth of the *Arca*. All the *Arca*, he adds, have not the cardinal teeth united by a straight line; for this line in some species curved at the extremities, and then the teeth become oblique, and in some species transverse: such species are closely approximated to *Cucullæ* in the hinge. Upon these grounds M. Deshayes is of opinion that the *Cucullæ* should be reunited to the *Arca* as a subdivision of the latter.

M. de Blainville had previously come to the same conclusion, for, in his *Manuel de Malacologie*, he had, as will be seen more in detail, in a particular account of *Arca*, that the species of which he had previously made mention, should be treated of *Arca* properly so-called, made *Cucullæ* one of the subdivisions of that genus.

The number of recent species of *Cucullæ* recorded by M. Deshayes in his tables is one only; nor are any more noticed in the last edition of Lamarré.

This species is the *Arca concomerata* of Martini, *Arca cucullæ* of Gmelin, *Arca cucullata* of Chemnitz, and *Cucullæ cucullatifera* of Lamarré, under which last name it is generally known for, but M. Deshayes well remarks, Martini's name has the priority, and it ought to be that by which the species should be designated.

**Description.**—The shape of the shell, which is of fair size, will be best understood than from verbal description. The longitudinal sliit are more marked than the transverse sliit. The colour is rather a deep cinnamon-brown externally, and internallv on the anterior part brown tinged with violet.

**Locality.**—The Indian Ocean; sandy bottoms.

P. C. No. 1145.

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**Cucullæ auriculatifera.**

**Arca. (Linn.)**

*Animal* more or less thick, generally rather elongated; mantle prolonging itself slightly backwards, and with a row of tentacular filaments on its borders; labial appendages very small and slender; foot pedunculated, compressed, and slit throughout its length.

*Shell* navicular, rather thick, equivelare, inequilateral, elongated, more or less oblique; umbones distant and often a little recurved forwards; hinge linear, straight, furnished throughout its length with a numerous row of small teeth or transverse lamine, which are equal and intrant; ligament entirely external.

M. Rang, who gives the above as the characters of the *Arca*, remarks that the species sometimes adhere by their foot, and more frequently by means of a byssus.

M. Deshayes, in the last edition of Lamarré, observes that the organization of this genus has been well known since the publication of the great work of Poli, *Testacea urtinaqua Scimium*, where he has demonstrated the anatomy of *Arca Nucæ*; and that it were to wish that the anatomy of a species which is perfectly closed, *Arca antiquata*, for example, should be detailed in the same manner. The external form of the animal approximates much to that of the shell itself; the lobes of the mantle are disunited throughout its length; they are delicate, and leave towards their median part a small gap corresponding to that of the shell: the body is rather thick. From the median part of the abdomen is elevated a very short thick truncated foot, offering at its truncation an oval and rather considerable mass of horny compact matter, in lieu of the silky byssus of some other Conchiferæ, and which serves both for attachment and also as a sort of operculum to close the opening of the valves into which it passes. On each side of the body may be seen, nearly throughout the length of the animal, two branchial, which are nearly equal, and composed of very fine and very flexible detached filaments. At the anterior part of the foot and of the abdominal mass there is a transverse slit of a moderate extent, having on each side two slightly projecting lips, but which are prolonged to the lateral parts of the body: this slit is the buccal aperture, and the lips are the labial palps. There are two adductor muscles which attach the animal to the shell; they are distant and situated at each extremity, the posterior being the most considerable. The animal is provided with powerful muscles proper to the foot, and all these last leave on the internal and superior surface a particular impression much
larger than is seen in the greater number of the other animals of this class. The buccal aperture leads into a narrow and rather long oesophagus, at the side of which and opening at its lower part is a small elongated pouch, in which is contained a small horny stylet. The oesophagus terminates at a very small globular stomach, in the walls of which are seen large crypts, by which the liver, which envelops it, pours in its secretion. The intestine is slender, and makes only a single circuit, so as to reach the dorsal and median line, passes behind the posterior retractor muscle, and terminates by an anus turned downwards. The organs of circulation have a particular disposition in the _Arca_, very different from what is known in the other _acephalous mollusca_. In nearly all the mollusks of this class the heart has a single ventricle embracing the rectum, and placed in the dorsal and median line of the animal. In the Arks, the back of the animal being very wide and the branchial very distant at their insertion upon the lateral parts of the body, there is a ventricle and an auricle for each pair of branchiae, or, in other words, there are in this genus two hearts. The nervous system is very considerable: the principal branches of it are to be seen on the internal surface of the posterior retractor muscle.

M. Deshayes adds, that if this organization be compared with that of the Pectunculi, sufficient differences will be found to justify the separation of the two genera; but he appears to think that this might not be the case if the animal of those _Arca_ which have no byssus were known.

M. de Blainville divides the _Arca_ into the following subdivisions:

- **A. (Les Navicules.)**
  - Navicular species; the hinge completely straight; the foot tendinous and adherent. (Byssoarea, Sw.) [Bysso-Arca.]
  - Example. _Arca noae._

- **B. (Les Bistournes—Genus Trius, Oken.)**
  - Example. _Arca tortuosa._

- **C. (Genus Cucullea, Lam.)**
  - Navicular species; the hinge completely straight; the terminal teeth much longer and more oblique than the others.
  - Example, _Cucullea auriculifera_, Lam.

- **D.**
  - Species with a straight hinge not notched or not gaping inferiorly.
  - Example, _Arca barbata._

- **E. (Les Rhomboides.)**
  - Species well closed, of less elongated form, more pectiniform, and with a straight hinge.
  - Example, _Arca rhombica._

- **F.**
  - Oral species, elongated or a little arched longitudinally, slightly gaping inferiorly, with the umbones at little distance from each other, the ligament nearly internal, and the dental line a little bent.
  - Example, _Arca mystilibidea._

The number of recent species recorded by M. Deshayes, in his Tables, is forty-three, and of these _Arca semilibeda_, _noae_, _tetricona_, _umbonata_, _barbata_, _Magellanica_, _Haliengii_, _antiqua_, _rhomboida_, _clathrata_, a new species, _Gaymardii_, and _Quindi_, are noted as both living and fossil (tertiary). In the last edition of Lamarck forty is the number given. Both these numbers are however below the mark. For instance, no notice is taken in Lamarck of the fifteen new species collected by Mr. Cuming, and described by Mr. G. B. Sowerby. (Zool. Proc., 1833.)

The following descriptions and cuts will give some idea of the difference of form assumed by the shells of this genus:

- **Arca noae.**
  - **Description.**—Shell oblong, striated; apex emarginate: umbones very remote, incurred; margin gaping.
  - **Locality.**—Atlantic Ocean, seas of Europe.

- **Arca tortuosa.**
  - **Genus Trius, Oken.**
  - **Description.**—Shell twisted, pinnel-shaped, striated; valves obliquely carinated; umbones small, recurved.
  - **Locality.**—The Indian Ocean.

- **Arca antiquata.**
  - **Description.**—Shell transversely, obliquely cordate, ventricose, many-ribbed; the ribs transversely striated and blunt; the posterior ribs bident. Colour white.
since the time of Linnaeus two species at least have been
confounded under the denomination of *Area antiquata*,
although they are easily distinguished; the one, more
transverse, has the cardinal surface always furrowed into
lozenge shapes when the valves are united; the other having
a thicker shell, the ribs flatter, wider, and striated, but
never with furrows on the cardinal surface. This last, being
the most common and most antiently known, should, in his
opinion, retain the name of *Area antiquata*, and he cites
the following figures of the shell: --- *Gault. Test.*, pl. 87, f. C;
*Chezn., Conch.,* t. vii., pl. 55, f. 548; *Encyclop.*, pl. 306, f. 2; *Gronov., Zooph.*, pl. 18, f. 13. M. Deshayes further
remarks, that the shell figured by Poli and cited by La-
marck in the synonymy constitutes a species distinct from
the two others. He adds that this, which inhabits the Me-
diterranean, is the living analogue of *Area diluvi*. Neither,
in his opinion, is the *Area antiquata* of Brochi; a true
*antiquata*, but the *Area diluvi*, the fossil analogue of
the species figured by Poli.

The number of living species stated in the tables of M.
Deshayes is nineteen, and of these the following are recorded
as both living and fossil (tertiary): --- *Pectunculus glycmera,*
*pilosus*, *violascens*, and *nummarius*. The number given
in the last edition of Lamarck is twenty; but the nu-
merous species named and described by M. Broderip and M. G.
Bowerby respectively, from Mr. Cuming's collection
(Zool. Proc., 1822; Müller, *Synopses*), are omitted.

*Example,* *Pectunculus pilosus.*

*Description.*—Shell orbicular; ovate, tumid, marked
with decussate striæ; umbones oblique; epidermis brown,
hairy.

*Localities.*—The Mediterranean and the Atlantic Ocean.

(Lam.)

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*Area antiquata.*

*Habits of the Genus.*—The *Pectunculi* live on bottoms of sandy mud and mud, at depths varying
from the surface to seventeen fathoms. Some of the species are moored to stones, corals, &c.

*Pectunculus.* Lam.

*Generic Character.*—Animal rounded, more or less thick,
with no tentacular filaments on the border of its mantle;
labial appendages very narrow; foot large, compressed, and
slit longitudinally.

*Shell* lenticular, thick, solid, equiva1ve, subequilateral,
entirely closed; umbones rather small and more or less
distant; hinge formed of a curvilinear row of small narrow,
rather numerous, internt teeth, which are often incomplete
under the umbones; ligament external. (Rang.)

*Habits of the Genus.*—The *Pectunculi* live on sandy or
muddy bottoms, and have been found at depths ranging
from five to seventeen fathoms. They move by means of
the foot, which the animal uses to propel itself.

M. Deshayes observes, in the last edition of Lamarck,
that if, in some important points, the organization of the
*Pectunculi* differs from that of the *Arcæ*, in others great
analogy exists. The *Pectunculi*, having no byssus, live free,
and have a foot formed nearly like the edge of an axe.
When that organ is contracted, the edge seems simple; but
when the animal dilates it, its lower part exhibits an oblong
disk circumscribed by a sharp border: this disk bears much
resemblance to that upon which the *Gastropoda* creep.
The branchiae are formed of long filaments, as in the *Arcæ*;
the abdominal mass is considerable, and the foot is attached
throughout its length. The buccal aperture is between the
anterior part of the abdominal mass and the anterior retrac-
tor muscle; it is in the shape of a transverse slit between
the two lips, which are prolonged on each side of the muscle
and ascend nearly to the base of the branchiae. The esoph-
agus is long and narrow, and has no horny style; it
terminates in a pyriform stomach, from which comes a
slender, cylindrical, and very long intestine, which, after
having made many circumvolutions, arrives at the median
and dorsal part of the animal, passes behind the posterior
adductor muscle, is contorted so as to follow its surface,
and terminates towards its inferior border, where it ends in a
floating anus. The heart is simple; a single ventricle
embraces the rectum; the auricles are very large, and do
not pour out the blood to the branchia by their border, but
they terminate anteriorly by two vessels, which are curved
backwards so as to furnish a small vessel to each of the
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*Localities.*—The Mediterranean and the Atlantic Ocean.

(Lam.)

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*Pectunculus pilosus.*

*Nucula.* Lam.

*Generic Character.*—Animal rather thick, subtriquetrous,
having the mantle open only in its inferior moiety, with
entire borders, denticulated throughout the length of the
back, without posterior prolongations; anterior buccal ap-
pendages rather long, pointed, stiff, applied one against the
other, like a kind of jaws, the posterior ones equally stiff
and vertical; foot very large, delicate at its root, enlarged
into a great oval disk, the borders of which are furnished
with tentacular digitation.

*Shell* rather thick, sometimes naecrous, subtriquetrous,
equivalve, inequilateral; umbones contiguous and curved
forwards; hinge formed on each valve of a numerous row
of small pointed teeth, disposed in a line broken under the
umbro; ligament in great part internal, short, and inserted
in small oblique fosset in each valve. (Rang.)

*Habits of the Genus.*—The species have been found on
bottoms of sandy mud and sand, both in estuaries and the
open sea, at depths varying from the surface to sixty fath-
oms. According to Mr. Cuming, the same species vary
much as to the depths at which they live; for he found

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N. cuneata from fourteen to forty-five fathoms; N. obliqua from fourteen to sixty fathoms; and N. Plem from seventeen to forty-five fathoms.

M. Deshayes, in the last edition of Lamarck, remarks, that though there is a species of Nucula widely spread in the British Channel and the Mediterranean, the animal remained unknown until M. Quoy figured that of a large and very curious species in the 'Voyage of the Astrolabe.' This animal, observes M. Deshayes, has, as Lamarck predicted, much analogy with that of the Pectunculi and Arece. The foot is compressed laterally, and slits at its free border, so that it can be dilated into a disk for creeping progression. The mantle-lobes are dissected throughout the length of their inferior borders. The abdominal mass is not thick, and the foot is attached to it throughout its length; on each side and above are found the branchiopods, which are nearly as long as the entire animal, and very narrow. According to the figure, they seem to be composed of detached filaments, as in the Arce and Pectunculi.

In front of the abdominal mass, and near the anterior adductor muscle, is the mouth, on each side of which is a pair of palps, very narrow and very much elongated on each side of the visceral mass; these palps are foliate to the internal surface. The internal organization does not appear to be known; but M. Deshayes of opinion that it may be used to bear much resemblance with that of the Pectunculi.

Animal of Nucula Australis.

1. a. mantle; b. foot; c. branchia; d. adductor muscles. 2. Outline of shell, with the foot of the animal projecting.

M. de Blainville divides the Nucula into two sections:

A. Species with the border entire.

Example, Nucula rostrata.

B. Species with the border crenulated.

Example, Nucula margaritacea.

The number of recent species of this genus in the Tables of M. Deshayes is seven, and of these, Nucula margaritacea, Pella, emarginata, and a new species, are recorded as occurring both living and fossil (tertiary). In the last edition of Lamarck the number recorded is ten. M. Deshayes however, who seems to confound the authors of the 'Mineral Conchology' and the 'Genera,' considering them as identical, says that M. Sowerby has added some living species in his genera, but that it is to Mr. Cuming to whom we owe the knowledge of the greatest number. He then proceeds to state that the latter has described them in the 'Proceedings of the Zoological Society of London,' and caused them to be figured in the 'Conchological Illustrations' published by Mr. Sowerby, and that he has described thirty-four living species. Still he gives but four of the new species in the text, attributing the names and descriptions to Mr. Cuming, who certainly collected them, but did not describe one. The names and descriptions are by Mr. G. B. Sowerby, who described ten from Mr. Cuming's collection, in the 'Zoological Proceedings' for 1832 (see also Müller's 'Synopsis'), which, strangely enough, are quoted by M. Deshayes for the description of the four which he has admitted into the body of the new edition of the 'Animaux sans Vertébres.'

The following descriptions and cuts will give some idea of the forms of this genus.

Example, Nucula rostrata.

Description.—Shell transverse, oblong, rather convex, thin, transversely striated; anterior side longest, attenuated and rostrate.

Example, Nucula margaritacea.

Description.—Shell obliquely ovate, trigonal, rather smooth; cardinal teeth straight, acute; margin crenated.

Nucula rostrata.

Example, Nucula margaritacea.

Description.—Shell obliquely ovate, trigonal, rather smooth; cardinal teeth straight, acute; margin crenated.

Nucula margaritacea.

1. Interior of valves, showing the teeth on each side of the hinge and the curtilacive pit in the centre. 2. Exterior of the tooth, the dental margin of the shell being shown to the observer, enlarged. 4. Valves closed, showing the umbones.

FOSSIL ARCADE.

Cucullaea. Mr. G. B. Sowerby ('Genera') notices the fossil species as numerous; of these, he observes, one (Cuc. crassatina) is described by Lamarck, and is found in the neighbourhood of Beauvais and at Bordeaux, in beds similar to that of Grignon, but in England several species occur, both in the greensand and in the inferior oolite. And are engraved in Sowerby's 'Mineral Conchology.' Mr. G. B. Sowerby adds, that those of the inferior oolite are also found at Bayeux in Normandy.

The number of fossil species (tertiary) recorded by M. Deshayes in his Tables is two. In the last edition of Lamarck the number is six. Dr. Mantel, in his 'Tabular Arrangement of the Organic Remains of the County of Sussex,' notes a Cucullaea in the chalk marl, and adds that M. Bronn has collected that a similar cast from Rouen, also Cucullaea decussata, from the Shales (Fevrasham). Professor Phillips ('Organic Remains of the Yorkshire Coast') records Cucullaea oblonga, contracta, triangularis, and pectinata, from the coralline, bath, and inferior oolite; concinna from the Oxford clay and Kelloway's rock; imperialis and cylindricala from the bath oolite; cancellata from the bath and inferior oolite; reticulata from the inferior oolite; and notices the occurrence of the form in the Speeton clay and the lias. In the second part (1836) he describes Cucullaea obtusa and arguta (Bolland). ('Illustrations of the Geology of Yorkshire'). Dr. Fitton, in his 'Stigmatical and Local Distribution of Fossils,' in his valuable paper 'On the Strata below the Chalk' (1839), notices the following Cucullaria:—corinata (Blackdown); costellata (lower green-sand, Kent; Blackdown, Devon); decussata (upper green-sand, Isle of Wight; lower green-sand, Kent and Sussex, Blackdown); fibrosa (Blackdown, Devon); formosa (Blackdown); globula (upper green-sand, Isle of Wight; lower green-sand, Kent; Blackdown, Devon); glabra (lower green-sand, Sussex); doublis (upper green-sand, Hampshire; lower green-sand, Kent); one or two other species (lower green-sand, Sussex); new (lower green-sand, Kent; Oxford oolite, Cambridge); a Cucullaea without any designation (lower green-sand, North Wales); and a small species from the Portland sand, Dorsetshire.

- Mr. Lonsdale, in his elaborate paper 'On the Oolitic District of Bath,' mentions Cucullaea oblonga (inferior oolite, Widcombe Hill) and Cucullaea glabra (upper green-sand, neighbourhood of Warmminster). Mr. Murchison ('Silurian System') describes and figures Cucullaria antiqua from the old red-sandstone (middle and lower beds only) and the upper Ludlow rock; Cuc. Caudoni from the upper Ludlow rock, with a ?; and Cuc. ovalis from the upper red-sandstone (middle and lower beds only). Professor Sedgwick and himself had previously given Gosau as a locality for Cucullaria corinata. ('Structure of the Eastern Alps.')

Area. The number of fossil species (tertiary) given by M. Deshayes in his Tables is fifty-four, several of which, as we have seen above, he records as both living and fossil (tertiary). In the last edition of Lamarck no more than eighteen, fossil only, are catalogued. Dr. Mantel mea-
tions two or three undetermined species from the chalk marl (Ringmer), and Arca carinata from the firestone or upper green-sand, Southbourn, Sussex, and Devises); and another (a very imperfect cast) from the galt or Folkstone marl, near Deal (P. decusatus* and amula* and emula from the coralline oolite, Yorkshire; Mr. Lonsdale notes an Arca from the inferior oolite (canal banks opposite Limpley Stoke), and another from Frome; also one from the Bradford clay. Professor Sedgwick and Mr. Murchison give an account of the species found in the Arca carinata from the upper green-sand, Hampshire; A. rotundata from Blackdown, and an uncertain species from the lower green-sand, North Wils, the Portland stone, Oxford, and the Oxford oolite, Cambridge. Mr. Murchison ('Silurian System') describes and figures Arca Eastnori from the Wenlock shales.

Pectunculus. Mr. G. B. Sowerby ('Genera') states that all the species known to him are found either in the London clay or the calcareous gravel; he says that a very neat one occurs in the indurated marl at Bognor, where it is accompanied by fossil Pinna, Lingula, &c., and he has figured it, believing it to be a variety of Lamarc's Pectunculus. (See figures.)

The next difficult point is to assign to the various species, as they are most abundantly met with, the names of Lamarck, as described, as well as the names of Deshayes, as given in his tables before mentioned, as both living and fossil (tertiary). In the last edition of Lamarc but fifteen species, fossil only, are catalogued. Dr. Mantell notes Pectunculus pulvatus from the upper green sandstone with cilia or tentacula; Arca bivirgata is figured by P. decusatus* from the arenaceous limestone or sandstone of Bognor. Professor Sedgwick and Mr. Murchison enumerate Pectunculus Plumiaedens, brevirostris, pulvatus* and cölolf from the Gosas deposits of Oxford. Mr. Lea describes and figures Pectunculi Broderi, minor, deltoideus, ellipitis, and obliqua from the Chalkebom beds (tertiary), Alabama.

Nucula. The number of fossil species (the latter publication) published by Mr. M. Deshayes is twenty-three, and four are enumerated as both living and fossil (tertiary). (See above.) In the last edition of Lamarc only seven are catalogued as fossil only. Dr. Mantell notices Nucula pectinata from the gault or Folkstone marl, and Nuca impressa from Blackdown. Professor Phillips records Nucula ovata and subcurvata from the Speeton clay; subcurvata from the inferior oolite; another from the coralline oolite; elliptica and nuda from the Bradford clay; variius and sachryma from the Bath and inferior oolite; aziniformis, inferior oolite; ovum and complanata, upper ool; cucuta, tunida, undulata, ciliata forms and Luciniformis (Bolland, 1829), and Coriovistula, Harlow, Northumberland. (P. Phillips notes Nucula ovata from the Bradford clay; and another from the forest marble. Professor Sedgwick and Mr. Murchison give us Nucula amygdaletoides and concinna in their list of Gosas fossils. Dr. Mantell notices Nucula antiquata (lower green-sand, Sussex, and Blackdown); apticulata (Blackdown); bitrigata (gault, Kent); impressa (lower green-sand, Sussex, and Blackdown); tinecta (Blackdown); obta (Blackdown); ovata (gault and lower green-sand, Kent); pectinata (gault, Kent, Cambridge. South Wils, Blackdown, Devon); undulata (gault, Kent), and another (gault, Bedford.)

Mr. Murchison figures these and describes Nucula ovata, ovalis, and levis; the first from the upper Ludlow rock, the second from the Llandilo flags. ('Sil. Syst.) Mr. Lea describes and figures Nucula Sedgwicki, ovata, pectunculiaria, Brongniartia, media, punta, pulvatus, magnia, carminera, plans, and zemen, from the Chalkebom beds.

POLYPE. The discoveries of Trembley regarding the structure and animal functions of the phytod Hydræ, and Plumetiss of fresh water, opened a new field of research into the natural structure and life of animals, and gave occasion for much correct inference and baseless conjecture. Borrowing from Aristotle and Pliny the term Polypt, by them applied to a cephalopod, the subkingdom was first adopted by Gmelin accepted, and under this title many really animalised masses in the form of plants, and after abundant examinations by Ellis and others of the membranous, horny, or stony 'culer,' bases, or axes, which remain after desiccation or decay of the softer parts, generally agreed in opinion that to all these plant-like bodies were associated active living animals like the Hydræ described by Trembley.

As in the flowering and reproductive organs manifest more active and varied functions than the general mass of bark and wood which serves to unite them in one common life, so in these Zoophyta the little Polypt expanding from their cells for food, light, or aeration, and shrinking again after the use of the necessary rays of light, seemed like so many animal flowers, which might be studied apart from the Polyptiria which they adorned. They were in fact studied apart, and unfortunately attended with no wonderful permanency or 'Polyptid,' as Lamouroux calls it, than to the Polypt themselves. Hence the imperfection of all the schemes of classification for this portion of the Zoophyta division of the animal kingdom, and many of the erroneous generalisations and hypotheses regarding the lower forms of animal life. There was besides a real impediment in the way of accurate and satisfactory observation of these minute parts of creation in the imperfection of microscopes. Until Amici, Chevalier, Prichard, Phillips, and other powerful reflecting and achromatic engines, it was vain to look for stomachs in the Polygastrics and a variety of internal organization in the supposed simple Polyp of the so-called seas-weed.

One of the most surprising results of the researches of Lamarck and others has been the discovery of a new and peculiar race—that of Lamarc's ('Anim. sans Vertb., tom. i.')—fixed for these animals the characters of gelatinous contractile body; alimentary canal with a single opening surrounded by a contractile aperture; reproduction by internal or external; organs of sense, respiration, or fecundation none; often associated into compound existence. If to these definitions we add the notion of extraordinary tenacity of life, manifested by the survival and multiplication of the Hydræ under the knife, the surprising fact ascertained in the Hydra by Trembley of the external surface taking up the function of digestion when the animal was turned inside out, the varieties of gennunipartation observed in Sertulare, Ceramia, &c., and other animalised parts of the tentaculæ or cilium around the mouth,—we shall see the state of this branch of zoology in the time of Lamarc.

That distinguished systematist presented a very simple and popular classification of Polypes, namely:—

Polypti ciliati, as many of the Rotiferous Infusoria.
Polypti denudati, as the Hydro. Polypti vagnati, as the compound Sertulare, Cerai, &c., Polypti tubiformi, as the Leptopila and its allies.
Polypti natantes, as the Pennatulaires.
The Actinium, thus expressly excluded from the class of Polypti, are very closely related to them. They are accordingly placed with the class of Polypti, by Dr. Johnston, in his easy and effective system, thus:—

Subclass 1. Radiated Zoophyta
Body contractile in every part, symmetrical; alimentary canal with one opening, the anus.

Order 1. Hydropt. Polypes compound; mouth with filiform simple tentaculæ; stomach excavated in the cellular substance of the body; no distinct muscular apparatus, the body contractile in all its parts; gennunipartation extraneous; polyptidum (if existing) external to the polyptes.
(Hydra, Sertulare, &c. Nudibranchi of Farre.)

Order 2. Asteroidea. Polypes compound; mouth encircled with 8 fringed tentaculæ; gennunipartation internæ; stomach membranous; polyptidum an internal axis.
(Gonogia, &c.)

Order 3. Heliantheæ. Polypes single; mouth encircled by tubulous (aquiferous) tentaculæ; stomach membranous; plaited; ovipartus by internal ovaria. (Actinia, &c.)

Subclass 2. Molluscæ Zoophyta. (Clilibrachiarcha or Farre. Bryoeca of Ehrenberg.) Body not contractile, symmetrical; mouth and anus separate; gennunipartum connate many axes.

Order 4. Ascidioida. Polypes aggregated; the mouth encircled with filiform linted tentaculæ; stomach distinct, intestine recurved to an anus near the mouth; ova internal. (Cellaria, &c.)

Thus we find among the Cellaria, Flustra, &c., which Lamarc ranked in his Polypt, animals quite different from his type, and making very near approach to the higher group of Tunicata. Monarchia, Mammalia, which Lamarc admitted, are excluded by Johnstona and
many modern writers, and constitute, in Dr. Grant's view, the class of Porifera. Whether they be of vegetable or animal origin, they certainly have no polypi. Dr. Frere (Phil. Trans. for 1837), who has paid successful attention to some of the higher groups of Polypi, and who unites in one group, Anthozoa, the second and third orders of Dr. Johnston, says, 'it appears that under the commonly received name of Polypi there exist three distinct types of structure, which must be referred to the same number of separate classes, possessing but few points in common, and these generally of the most superficial kind.' [POLYPIARIÀ; ZOOPHYTARIÀ]

POLYPHE'MUS (Conchology). De Montfort's name for a genus consisting of those species of Actinia which have elongated apertures, short spines, and an indulation in the outer lip.

Example, Polyphemus Glans. Polyphemus is also a name given by Müller and others to certain crustaceans belonging to the order Lophopyra, Latr.

POLYPHY'LLIA. [MADREPHYLLICA]

POLYPHY'SA, the genus formed by Lamouroux for a marine plant-like body allied to Corallina. [PSEUDOSARIA]

POLYPI'RIA. In subdividing the Linnean Zoophyta, naturalists have generally recognised the propriety of separating in one distinct class the compound, plant-like, generally polypiferous animals; Lamark, Lamouroux, and Cuvier agree in this. Blainville's system of classification employs the term Polypiaria for one of several related classes (procured by dismembrament of Lamark's Polypi), and divides it into four important subclasses, viz. Polypieria solidi, Polypieria membranae, Polypieria dubia, Polypieria nuda. In the present article we shall present a condensed view of the three latter classes, referring for the two families of the first to their respective titles. Millepore'nia and Tubuliporide; and for some general views of the classification of Polypian animals to POLYP and ZOOPHYTARIA.

The active animal parts of the Polypiaria of Blainville are generally of slender figure, provided with filiform tentacula in one row, and either nude or contained in cells of various form and substance, but never lamelliferous, agglomerated together.

The subclasses are thus defined:

Polypiaria solida. Animals contained in small calcareous cells, with a terminal opening, accumulated into a solid fixed polyparium. Ovaria internal.

Fam. 1. Milleporide.  
Fam. 2. Tubuliporide.  
Polypiaria membranae. Animals very short, unciliated, provided with a number of tentacula (often ciliated) in one row, contained in membranous, rarely calcareous, adherent cells, with a more or less bilaterally opening. Ovaries external.

Fam. 1. P. operculifera.  
Fam. 2. P. cellaria.  
Fam. 3. P. sertularia.  
Polypiaria du'roc. Animals urceiform, provided with long (often ciliated) tentacula, arranged in a circular form around and above the opening of the mouth, and springing from a common membraneous basis. (Zoophyta ascribi'da; Fam. Lamintia, Johnston.)

Polypiaria nuda. Body gelatinous, very contractile, free, excavated into a gastric cavity, of simple form, provided at its entrance with cirrhosta tentacula; no trace of viscera; reproduction by external germs. (Part of Zoophyta hydroida of Dr. Johnston.)

POLYP'RIA MEMBRANAEC.  
Fam. 1. Operculifera or Eschariaria.  
Animals provided with a horny operculum for closing the cells which contain them. Intestinal canal with two openings. (Dr. Johnston includes them in his order of Zoophyta ascribi'da. Mille Eschariaria calls them Bryozo'a. They belong to Dr. Frere's Ciboribachista.)

Gener.  
MYRIAPORA.  
Animals cylindrical, terminating anteriorly in a tubular extendable proboscis, surrounded by many simple tentacula, arranged into the shape of a funnel; on one side of this body is a cartilaginous ring operculum. Cells simple, oval, with a small round opening, united into a calcareous, fixed, circular, thin, porous polyparium.

Example, Millepora truncata, Linn. (recent). SOL. and ELIS, tab. 23, f. 1-5.

POL 386 PO L

Animals swollen in the cephalic region, and bearing a circle of simple filiform cirri. Cells not prominent, indistinct externally, having a depressed small round operculum orifice, uniting regularly in quinuex, as so as to constitute a calcareous, brittle, friable, porous, leaf-like polyparium of variable shape.

Example, Eschariaria foliaceae. Ellis's 'Corallines.' t. 30, f. a, b, c.

Eschari.  
Blainville includes in this genus several Celleporas of Linnéus, Goldfuss, and Fleming. Mr. Lonsdale gives a fossil species from the Silurian rocks, and Goldfuss names no less than twelve from the chalk and tertiary strata.

Mille Edwards has proposed to divide the genus into three, according to the structure of the cells (Ann. des Sci. Nat., 2nd series, tom. vi.)—

Eschari, in which the adjoining cells are closely united, and the anterior part is semicircular.

Membranipora, with a calcareous border and a membranous centre to the cell.

Eschariaria; cells juxtaposed, circumscribed, the external anterior parietes calcareous to the edge of the small operculated opening.

Of this genus Mr. Lonsdale gives a dubious species from the Wenlock rocks.

Philodictya (fossil), Lonsdale.

Thin elongated expansions, having on each surface small quadrangular cells not convex, which penetrate the oral obliquely, and are arranged, with respect to the surface, in longitudinal lines on the middle, and in oblique lines on the sides. Surface a thin calcareous crust. Opening of the cells small, transversely oval. No partition, as in Eschari, between the two layers of cells.

Example, Flustra lanceolata, Goldfuss. ('Pétref,' tab. 37, f. 2.)

DIASTOPHORA (fossil), Lamouroux.

Animals unknown. Cells rather tubular, with rounded opening, disposed irregularly in vertical rows on one face of a lamelliform, irregular, variously expanded polyparium.

Example, Diastopora foliaceae, Lam. From the colite of Caen.

Ocellaria (fossil), Ramond.

Animals unknown. Cells rounded, elevated in the middle, and united in quinuex on the two faces of a stony, fleshy, variously shaped polyparium.

Example, Ocellaria nuda. From the chalk of Mont Perdu.

ADEONA, Lamouroux.

Animals unknown. Cells very small, indistinct externally, with a round, impressed, tormidum, operculated opening, closely united quinuexially on the two faces of a foliaceous polyparium connected with an articulate stem.
Example, Adeona foliifera, Lamarck. Blainville, pl. 76, f. 2.

Adeona foliifera.

Mesenteripora, Blainville.

Animals unknown. Cells distinct, oval, oblique, rather prominent, with a subterminal oblique opening; ranged regularly in quinconex in two series, united so as to form a fixed calcareous polyparium, composed of convoluted expansions radiating from the point of attachment.

Example, Mesenteripora sobbinula (Scehara of Lamarck). There are fossil species from the colitis of Caen and Bath.

Retepora.

Animals very small, slender, cylindrical, with a circle of simple filiform tentacles. Cells very small, indistinct externally, contiguous, with an oblique (operculated?) opening. The polyparium formed of these cells in one series is a leaf-like expansion, and composed of ramifications which anastomose into a network, and bear the openings of the cells on the inner face only.

Example (recent), Retepora cellulosa. Ellis, 'Coralines,' t. 25, f. D.

Re epora cellulosa.

Whether the fossil species admitted by Lamarck, Blainville, and Defrance, really belong to the genus, we are ignorant; but very many of those referred to this genus by Goldfuss and Phillips, from the carboniferous limestone and older strata, have a most decided analogy to it. Some of them, when of a conical shape (as, if perfect, many are), exhibit the openings of the cells not on the inner but on the outer face. (Geology of Yorkshire, vol. ii., pl. 1.) The late Mr. Miller of Bristol proposed (in MS.) for fossils of the same type found in the transition limestone to constitute a new genus, and Mr. Lonsdale, adopting this view and using the convenient name of Fenestella, has given characters for the group. (Silurian System, p. 677.) From a careful study of many species of this type, we offer the following abridged generic character:—

Fenestella (fossil), Lonsdale.

Animals unknown. Cells very small, indistinct externally, with small (prominent) openings. The polyparium formed of these cells is a leaf-like (often indistinctiform) expansion, composed of ramifications radiating from a centre, bearing each two rows of openings from the cells on the outer face only, and connected by transverse bars into a reticulated structure.

Example, Fenestella prisca. Lonsdale, 'Silurian System,' pl. 13. From the Wenlock rocks.

The species occur chiefly in the 'upper transition' or Silurian rocks of Shropshire, Dudley, Devonshire, the carboniferous rocks of England and Ireland.

Verticillipora (fossil), Defrance.

Cells poriform, arranged in reticulation on the surface of convex imbricating plates round a hollow axis, so as to form a fixed irregularly subcylindrical polyparium.

Example, Verticillipora etrecolea, Defrance. Blainville, t. 66, f. 1. From the chalk.

Defrance.

To this rather obscurely characterised genus Mr. Lonsdale assigns a species from the Silurian rocks.

Octylipora (fossil), Lamarck.

A regular cylindroidal tubular body, rounded at both extremities, with a round orifice at one marginated by a limbed lip or border; both inner and outer surface reticulated with numerous indistinctiform holes, the partitions between which are pierced by pores supposed to be orifices of the polypherous cells.

Only one species of this singular and elegant coral (if such it be) is known, viz. D. cylindroideus, from the tertiary strata. Blainville, pl. 72, f. 4.

Conipora, Blainville.

An obconical or pyriform hollow body, composed of a thin crust pierced by many quadrangular holes arranged in quinconex.

One species, Conodictyum striatum, Goldfuss (tab. 37, f. 1). From the Jura-kalk of Baireuth.

Ovulites (fossil), Lamarck.

An oviform or cylindrical hollow body perforated at each extremity, and covered by scattered irregular, polygonal, very fine pores.

Lamark, who constituted the genus, describes two species, O. margaritula, and O. elongata, both from the tertiary strata of Grignon.

Polytrypa (fossil), Defrance.

A subcylindrical fistulous mass, perforated at each extremity, and pitted within and without with round pores (openings of short cells) very closely set, and arranged in rings, especially on the inner face. (Allied to Daetylipora.)

Example, Polytrypa elongata, Defrance. From the tertiary strata of Vaingels. Blainville, pl. 73, f. 1.

Vaginopora (fossil), Defrance.

General form a hollow, external, cylindrical cellular crust, enveloping but not touching an internal hollow tube. The cells of the external crust are hexagonal and united in quinconex, with a small round subcentral orifice; those of the inner tube are elongated and ranged in rings. (It is not unlikely that the union of the two tubes in one specimen is accidental. Only one species, V. fragilis, and of that only a fragment, was known to Defrance, from the tertiary beds of Parnes.)

Larvari (fossil), Defrance.

A cylindrical, antenniform, fistulous body, composed of cellulariform grans arrayed in rings, and leaving between them circular rows of round pores which penetrate through the mass to the exterior cavity.

Example, Larvari reticulata, Defrance, from the tertiary strata of Gually, Blainville, p. 71, f. 3.

Palmularia (fossil), Defrance.

A fixed oral elongated body, flattened, and smooth on one (probably the lower and adherent) side, and ornamented above and on the sides with two oblique rows of small cellulosiferous ribs, which dentate the border.

Example, Palmularia Soldani, Defrance, from the tertiary strata of Grignon, Blainville, pl. 68, f. 5.

Concerning the genera Palmularia, Larvari, Vaginopora,
Polytrypa, Orulites, Conipora, Dactylopora, it is to be remarked that doubts have been expressed as to their really belonging to the Polypparia at all. The discussions on this subject in Blainville’s ‘Actinologie‘ do not entirely clear up the subject.

Cellpora, Lamark.

Animals provided with eight simple tentacula and two openings to the intestinal canal. Cells complete, circumscribed, uneroded, tubid, with a round operculated terminal opening. The polyppary which they form by their irregular accumulation is of a spongy and porous consistence, and appears either encrusting other bodies or rising into ramose masses like a madrepore.

Example, Cellpora pumicosa, Linn.

Goldfuss mentions many fossil species, from the antient as well as most recent strata.

Cadosus, Savigny.

Polyppary orbicular, lappidaceous, plano-convex, pierced above with central and scattered pores.

Example, Cadosus imbutiformis.

Berenicis, Lamouroux.

Animals unknown. Cells submembraneous, prominent, oval, separated, with a round subterminal opening; scattered irregularly or in a radiating manner on the surface of a thin attached crust. A subdivision of the old genus Cellpora, proposed by Lamouroux.

Example, Berenicis diluviana. Fossil from Caen, (Lam.x. ‘Gen. Polypr,’ tab. 82, f. 1.)

Discopora, Lamark.

Animals unknown. Cells complete, prominent, more or less with a round terminal operculated opening. The polyppary found by their union in one series is a very small and thin crust. (A subdivision of Cellpora proposed by Lamark.)

Example, Discopora verrucosa, Lamark.

Membranipora, Blainville.

Animals hidryiform. Cells circumscribed, not prominent, closed above by a thin faguous membrane in which the round opening is pierced. The polyppary formed by their union is membranous, and spreads in a lamina on the surface of marine bodies.

Example, Flustra membranacea of Linneus.

Blainville states that it is not certain that all the species are operculated. If not operculated, they should be carried to the next great family, and perhaps reunited to Flustra. Several of Goldfuss’s fossil Cellpora are referred to this genus by Blainville.

Fam. 2. Cellariae.

Animals hidryiform, separate, distinct, with very fine tentacula. Cells oval, depressed, membranous with a bilateral opening which is not terminal. The polyppary which they form by their union laterally in 11 rows, is membranous, and fixed; (ovaria external?) no operculum. The Linnæan genus Cellaria is the type of this family, which ranks with the Zoophyta Ascidoida of Johnston, and the Chilibrachiata of Farre.

Gen. Lunulites (fossil), Lamarck.

Cells in one series arranged in concentric circles on diverging radial bases from openings being on one (the upper) surface. Polyppary regular, orbicular, convex above, concave below. (In the typical species the concave side is radiated.)

Example, Lunulites radiata, Lamark.

Blainville, pl. 75, f. 5.

Electra, Lamouroux.

Animals unknown. Cells membranous, vertical, bell-shaped, ciliated on the edges, closed by a membrane like a diaphragm, with a small semilunar opening, and united in a verticillus form round some other body, or in spike-like branches. (Closely allied to Flustra.)

Example, Flustra verticillata, Linn.

Lamouroux, ‘Polypl. flex.’, pl. 2, f. 2.

Flustra.

Animals provided with numerous simple tentacula, in one row. Cells complete, separate, depressed, with a thick stiff prominent margin, giving attachment to a membraneous part, in which is a subterminal transverse opening. Arranged in quineux, the cells unite to form a membranous flexible encrusting or frondescent polyppary.

This great genus is divided by Blainville into four sections, viz.:

1. Enuncias, as Flustra dentata, membranacea, pilosa, &c.

2. Frondescent, formed of two series of cells, as F. foliacea, F. truncata, &c.

3. Frondescent, formed of one series of cells, as F. carbusae.

4. Cells narrow lobed, with one series of cells, as F. avicularia, F. setacea, &c.

There are fossil species from the tertiery and perhaps older strata.

Example, Flustra carbusae. Sol. and Ellis, ‘Zooph,’ tab. 3, f. 6, 7.

Admirable figures of Flustra pilosa are given by Mr. Lister, in the ‘Phil. Trans.’ for 1834.

Elkera, Lamouroux.

Animals unknown. Cells rather large, elongate oval, subhexagonal with raised margins, which support a membraneous expansion, in which a sigmoideal aperture appears. By a quineux and at the same time circular arrangement of the cells, a branching dichotomous fixed membranous polyppary is formed.

Example, Elkera, Blainville. From Australasia. Blainville, pl. 80, f. 2.

Flerus, Lamouroux.

Animals unknown. Cells oval, ending in a large prominent tubular opening, and arranged in oblique rows on only one face of a membranous or subgelatinous frondescent, flabelliform, fixed polyppary.


Vinularia (fossil), Defrance.

Cells oval, subhexagonal, regular, with a subterminal semilunar opening; united longitudinally in several rows, they form a slender brittle polyppary (en forme de baguette).

Example, Vinularia fragilis, Defrance.

Blainville, pl. 67, f. 3.

Goldfuss, calling the genus Glauromine, describes two other species from the tertiaries of Westphalia, and one (probably not congux, but really allied to Fenestrella) from the transition strata.

Cellaria.

Animals with an elongated contractile proboscis, a circle of twelve tentacula, and an internal proboscis. Cells regular (hexagonal or oval), with a transverse (subtubular) opening, arranged circularly in quineux on the surface of the cylindrical dichotomous articulation of a subcalcareous plant-like polyppary, attached by horny tubes like roots.

Section 1, species which have hexagonal cells and a transverse opening (Salicornia of Cuvier).

Example, Cellaria Salicornia. Ellis, ‘Corallines,’ tab. 22. (Forming makes it genus Pachinio.)

Section 2, with oval cells, and tubular opening.

Example, Cellaria coroides. Ellis and Solander, tab. 5, fig. 6, b. c.

Intricaria (fossil), Defrance.

Cells hexagonal, elongated, with a raised border covering all the surface of a rather solid polyppary, formed of cylindrical branches irregularly anastomosed.

Example, Intricaria Bajocensis, Defrance. From the ools of Bayeux. Blainville, pl. 68, f. 1.
Polmenipa, Acamarchis, Alecto and Oousinal fixed 7,6,fe. Opening, hardly 19, cells 64, Animals Animals Animals Animals Animals. Example, Canda arachnoidea, Lamouroux. (Zooph., pl. 64, f. 19.) From Australia.

Cabeere, Lamouroux.

Animals unknown. Cells small. Polyornary calcareous, plant-like, dichotomous, articulated, bearing on one side the cells arranged in quincuex, and on the other the continuation of the flatulose branches by which it is attached.

Example, Cabeere pinna, Lamouroux. From Australia.

Tricellaria, Fleming.

Animals hydiform. Cells with an oval terminal opening, arranged in three rows on the articulations of the poly- parium, which is plant-like, dichotomous, and fixed by radial fibres.

Example, Cellaria ternata, Solander and Ellis. European seas.

Acamarchis, Lamouroux.

Animals unknown. Cells corneous, adpressed with a vesicle at the orifice, ranged in two lateral rows so as to compose the articulations of a horned plant-like dichotomous poly- parium, fixed by radial fibres.

Example, Cellaria herinita, Linn. (Ellis, Corallines, t. 19, f. a, B, C.)

Bicellaria, Blainville.

Animals hydiform, with eight simple tentacula. Cells hardly prominent, arranged in two alternate rows, with their orifices on one face of the poly- parium, which is of a cretaceous substance, plant-like, dichotomous, and fixed by radial fibres.

Example, Bicellaria eliata, Ellis, 'Corallines,' t. 20, No. 5, d, D.

Crisia, Lamouroux.

Animals hydiform. Cells ending in a prominent tubular opening, arranged on two alternate rows of articulations of a plant-like dichotomous poly- parium fixed by radial fibres.

Example, Cellaria eburnea, Ellis, 'Corallines,' t. 21, No. 6, fig, a, A. (This genus of Lamouroux included in that author's arrangement Bicellaria and Tricellaria.)

Gemmellaria, Blainville.

Animals hydiform. Cells oval, with an oblique sub- terminal opening, united two and two dorsally, so as to form the articulations of a plant-like dichotomous poly- parium fixed by radial fibres. (Notaria of Fleming; Gemellaria of Savigny.)

Example, Cellaria loriculata, Ellis, 'Corallines,' t. 21, fig, 7, D, B.

Uncellaria.

Animals unknown. Cells elongated, with a terminal opening, forming one on the articulations of a calcareous plant-like poly- parium, fixed by radial fibres. (Eucratia and Lafa of Lamouroux.)

Example, Uncellaria chelata. Ellis, 'Corallines,' t. 22, No. 9.

Catenicella, Blainville.

Animals unknown. Cells horny, oval, with their openings not terminal, growing one out of another, end to end, or laterally, and spreading over marine bodies in a reticulated or chain-like arrangement. (Hippothoe of Lamouroux?)

Example, Catenicella Sauvigny. Egypt: see the great work on Egypt ('Description de l'Egypte'). 'Zool. Polyps.,' pl. 13, f. 1.

Menippea, Lamouroux.

Animals unknown. Cells oval, trifurcate; their orifice rounded, not terminal; arranged in one row on one side, and growing one out of another dichotomously, so as to form the articulations of an umbelculose plant-like poly- parium, fixed by many radial fibres.

Example, Cellaria cirrata. Ellis and Solander, t. 4, fig, d, D.

Alecto (fossil), Lamouroux.

Cells elongated, tubular, with an oval subterminal orifice, growing one out of another (dichotomously or singly), arranged in one row, and spread in a reticulated form on marine bodies.

Example, Alecto dichotoma, Lamouroux. (Zooph., t. 81, f. 12-14.) From the oolite of Carn. Fam. 3. Serrulariaceae.

Animals hydiform, with simple (ciliated?) tentacula and external ovaries. Cells tubular, more or less tooth-like, forming part of a continuous horny subarticulated tube, which is traversed by a soft medullary axis, and fixed by radial tubules.

The Linnean genera Tubularia and Sertularia constitute this very natural and beautiful family, which is included in the Zoophyta Hydroidea of Johnston, and the Nudibranchs of Forre. The genera which follow, from Lamarc and Lamouroux chiefly, require much reconsideration. Section 1. Tubularia.

Genera.

Anguinaria, Lamarc.

Animals unknown. Cells subcalcareous, solitary, tubular, or arched, with a large oval oblique subterminal opening, growing irregularly out of a horny anastomosed stem, which spreads on marine bodies. (Atea of Lamouroux. Mr. Lieter wishes it to be placed near Fussia.)

Example, Cellaria anguina, Linn. (Ellis, 'Corallines,' pl. 22, No. 11.)

Aulopora, Lamarc.

Cells tubular, with a round opening, more or less projecting, anastomosed so as to form a polyparium, attached to and more or less rampant on marine bodies.

Example, Aulopora serpen, Goldfuss. ('Pértret,' t. 39, f. 1.) Millipora dichotoma, Linn. From the E'Ief limestone. Mr. Lonsdale and Goldfuss give other species from the same formation in England, in the E'Ief, &c., and others of rather different type are mentioned by Goldfuss, from the oolites of Francheia.

Tibiana, Lamarc.

Animals unknown. Cells cylindrical, tubular, united into an angularly bent tube, on the projecting angles of which are situated the round openings of the cells. The tubes are fasciculated, and reunited to a base fixed by spheres.

Example, Tibiana fasciculata, Lamouroux. ('Polyp. flex.,' pl. 7, fig, 3, a.)

Tubularia, Pallas.

Animals bearing a sort of proboscis projecting from the centre of a circle of ciliated tentacula. Cells infundibi- form, placed at the extremity of long horny simple or bifur- cated tubes, which form by their assemblmg a rooted poly- parium. (Much allied to Campanularia.)

Examples, Tubularia indivisa. (Ellis, 'Corall. , t. 16, f. c.) Tubularia ramosa. (Ellis, 'Corall. , t. 17, f. a.)

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Coryna, Gartner.

Animals club-shaped: the upper oval part being covered with slender tentaculæ ending in suckers, and supported by a long simple or branched vertical attached stem. (Linnæus ranked them with Tubularia (a confused genus in his arrangement); Müller with Hydra, and Lamarck places Coryna near Hydra, giving further to it the character of a terminal mouth.)

Example, Coryna squamata, Pallas.

Here come the genera Corynornophs of M. Sars, Syn-coryna of Ehrenberg, and Pediocellina of Sars. In the latter both the mouth and anal orifice are at the upper extremity of the oval expansion.

Section 2. Sertulariæ. (Genus Sertularia of Linn.)

Sertularia, Lamarck; Clytia, Lamouroux.

Animals bearing a simple circle of ciliated tentaculæ. Cells unrolled, pedunculated, attached along a common filiform, branching, twisting, or climbing axis.

Div. 1. Axis climbing.

Example, Sertularia volubilis. (Ellis, 'Corallines,' t. 14, fig. a, A.)

Div. 2. Axis not climbing.

Example, Sertularia rugosa. (Ellis, 'Corallines,' t. 15, fig. 23.)

Laomedea, Lamouroux; part of Campanularia, Lamarck.

Animals with twelve ciliated tentaculæ. Cells peduncu-
lated, scattered on the branches of a plant-like polygamium, fixed by radical fibres.

A. Stem simple; cells scattered.

Example, Laomedea fruticosa, Esper. ('Zooph.,' t. 34, fig. 1, 2.)

B. Stem simple; with alternate cells.

Example, Sertularia dichotoma, Linn. (Ellis, 'Corall.,' t. 12, fig. a, c.)

C. Stem complex; cells scattered.

Example, Laomedea dumerosa, Johnston. (Ed. Ph. Journal, xiii., t. 3, f. 2, 3.)

D. Stem complex; cells alternate.

Example, Sertularia gelatinosa, Linn. (Ellis, 'Corall.,' t. 12, fig. c.)

E. Stem complex; cells verticillate.

Example, Sertularia verticillata, Linn. (Ellis, 'Corall.,' t. 13, fig. a, A.)

Vesicularia spinosa, Thompson. Valeria spinosa, Fleming, is arranged in this latter subdivision by Blainville. (See Dr. Fare's drawings of this species in 'Phil. Trans.,' for 1837.)

Sertularia, Lamarck; Amidithia, Lamouroux.

Animals unknown. Cells very distinct, conical, almost tubular, placed in series on one side of the articulations of the filiforous branched and fixed polygamium.

Dr. Fleming proposes to divide this large and beautiful genus into two groups, according as the stems are simple (as in the above species), or compound, as in Plumbularia micran-thophyllum. The works of Ellis, Lamouroux, and Dr. John-
ston may be consulted for the drawings of the species, of which several are British.

Sertularia, Lamarck.

Animals having ciliated tentaculæ. Cells sessile, urceo-
late, arranged alternately or in pairs obliquely (not exactly opposite) on the stem and branches of the polygamium, which is horny, filiforous, generally bent in zigzag, and at-
tached by radical fibres.

Thus circumscribed and reduced to a mere fragment of the great Linnæan genus. Sertularia still includes many species from the European and Australian seas.

Example, Sertularia Polyzoas, Linnaeus. Ellis, 'Corallines,' pl. 2, No. 3.

Biserialia, Blainville; Thujaria, Fleming.

Animals unknown. Cells turbinate, sessile, not pro-
minent, touching and placed in two rows along the rami-
fications of the horny plant-like polygamium, which is fixed by radical fibres.

Example, Sertularia Thuja, Linnaeus. Ellis, 'Corallines,' pl. 5, No. 9.

Idia, Lamouroux.

Animals unknown. Cells oval, rather recurved, closely
ranged on two alternate rows, and projecting on the sides of the branches (themselves alternating) of a plant-like fixed polygamium.

Example, Idia pristis, Lamouroux. 'Polyp. flex.,' pl. 3. Australia.

Tulipanaria, Lamarck; Psysythea, Lamouroux.

Animals unknown. Cells arranged in pairs and small groups in each articulation of the polygamium, which is connected to a repent stem.

Examples, Sertularia tulipifera, Gmelin (cells peduncu-
lated); Sertularia quadrimenta, Gmelin (cells sessile).

Antennularia, Lamarck; Nemertesia, Lamouroux.

Animals with eight tentaculæ. Cells minute, indistinct, opening on the inside of ciliated articulations, which are arranged in whorls round a filiforous horny stem rising from root-like fibres.

Example, Antennularia indirisa. Ellis, 'Corall.,' pl. 9, a.

Dynamena, Lamouroux.

Animals with twelve simple tentaculæ. Cells urceolate, or tooth-like, sessile, arranged in pairs (regularly opposite)
and prominent along the branches and stem of a horny, articulated, plant-like, fistulous polyparium, which is attached by creeping radial fibres.

Example, Dynamena operculata. Ellis, 'Corallines,' pl. 3, No. 6.

Dynamena operculata.

This genus, rich in British species, is separated from Sertularia by convenient rather than by important distinctions.

Cymodoces, Lamouroux.

Animals unknown. Cells filiform, lengthened, regularly opposed two and two, and transversely, on horny fistulous stems, which are attached by a broad thin base. Example, C. ramosa, Lamouroux. 'Polyp. flex.,' tab. 7, f. 1.

West Indies.

Salacia, Lamouroux.

Animals unknown. Cells dentiform, minute, oval, verticillate four and four, along the tubular branches of a horny plant-like fixed polyparium.

Example, Salacia tetracythara, Lamouroux. 'Polyp. flex.,' tab. 6, pl. 3. Australia.

Thoa, Lamouroux.

Animals elongated, having twelve simple tentacula, and mostly projecting beyond the cells. Cells dentiform, minute, indistinct, alternate on the sides of the compressed branches of a horny stem formed of interlacing tubes, the lower ones root-like.

Example, Sertularia balecina, Gmelin. Fleming. Entalophora (fossil), Lamouroux.

Cells elongate, dentiform, recurved, with a round terminal opening, scattered on a plant-like, slightly ramose, fixed polyparium.


POLYPHARIA DUBIA.

Genera.

Cristatella, Cuvier.

Animals short, growing irregularly from a common unattached basis. Many ciliated tentacular cirri, arranged anteriorly in a lunate or horsehoeform, with the mouth in the middle of the branches. A median opening at the base of the dorsal region.


Animals hydroid, retractile into a fixed suberose polyparium, composed of vertical subpentagonal tubes full of granular corpuscles. Many tentacula arranged in a horsehoeform.

Example, Alocyonia stagnorum, Lamarcck, Blainville, pl. 85, f. 8.

Plumatella, Rin. Naisa, Lamouroux.

Animals short, capable of retraction, projecting from a sort of rampant attached thallus. Two fasciculi of unequal tentacular cirri, forming a horsehoe figure, in the midst of which is the mouth.

Plumatella cristata, Lamarcck. 'Polype à panache,' Trembley, pl. 10, f. 8, 9.

Diffugia, Leclercq, Lamarcck.

Body small, gelatinous, contractile, enclosed in a sheath of an oval subaspersal figure, extended into a straight termination and covered with arenaceous grains. Tentacula unequal, retractile.

Example, Diffugia proteiformis, Lamarcck. Blainville, pl. 86, f. 5.

It is perhaps still uncertain what may be the exact relation between the four genera of fresh-water Polyparia just enumerated. The strong analogy between them is admitted by all modern writers, and M. Raspail, in Memoires read to the Academy of Sciences, has endeavoured to prove that they are all one and the same animal in unequal states of development, a proposition since controverted on good grounds by M. de Gervais, Mayer, Ehrenberg, &c.

Dedalea (marine), Quoy and Gaimard.

Body ovoid, glandiform, with long simple subradiating tentacula. Cells of the same form, transparent, attached in irregular groups on a cylindrical axis of gelatinous or membranous substance, which bifurcates or trifurcates and anastomoses into an irregular unattached reticulation.

Example, Dedalea mauritiana, Quoy and Gaimard. Blainville, pl. 81, f. 6.

POLYPIARIA NUDA.

Under this division, only the genus Hydra (which see) is retained by Blainville. Lamarcck included Hydra, Coryna, Pedicellaria, Zoanthus. Regarding Pedicellaria, which is attached to the shells of Echinii, it is perhaps a part of the Echinodermatous structure. Coryna is included in Polyp. membranaceae. Zoanthus is closely related to Actinia.

POLYPIARIA CORTICIFERA.

Lamarcck has grouped under this title a family of Polyparia for the most part very natural. Ramified into an oblongrecess form from a fixed base; composed of two separate parts, an external living fleshy envelope bearing and containing polypi, and an internal firm solid inorganic axis; these corticiferous Polyparia, as Lamouroux also calls them, are in general easily recognized. Lamarcck gives only six genera, viz. Corallium, Melitina, Issa, Antipathes, Gorgonia, Coralina. (Whether the latter should be ranked with plants, as many moderns think, or compose a separate group of Zoophyta (Calepiferous Corallines of Lamouroux) is uncertain; they are not rightly placed with corticiferous Polyparia.)

Lamouroux omits from the group Corallina, to constitute a separate section, but introduces rather awkwardly the group of Spongian. Augmenting Lamarcck's genera, he gives of true Corticifera eleven types, viz. Anadromena, Antipathes, Gorgonia, Plexaura, Eunicea, Murica, Prim- non, Corallium, Melitina, Mopsea, Issa. (Exposition des Polypiers.)
Cuvier, taking a different view of the bounds of the group, notices the interior conformation of the animals, whereby they approach to Actinia, and adopts the following classification:

Polyopiaria corticifera—1. Ceratophyta with a horny axis.

<table>
<thead>
<tr>
<th>Antipathes</th>
</tr>
</thead>
</table>

Gorgonia—Plexaura, Eunicas, Muricea, Primoon.

<table>
<thead>
<tr>
<th>2. Lithophyta with stony axis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corallium, Melitsea, Isis, Mopsea.</td>
</tr>
</tbody>
</table>

(Madrepora, &c. &c.)

<table>
<thead>
<tr>
<th>These are quite misplaced.</th>
</tr>
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</table>

3. Natantia

<table>
<thead>
<tr>
<th>Pennatula, &amp;c.</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. Alycionea.</td>
</tr>
</tbody>
</table>

Alycioneum, Tethya, Spongia.

Dr. Johnston, in his valuable work on British Zoophytes (1836), has arranged them very conveniently in the order of Asteroida.

Blainville places the Corticifera in his class of Zoophyta, which includes the families—1. Tubifera; 2. Corallia; 3. Pennatula; 4. Alycionea or Sarcoides.

The family of Corallia exactly corresponds to Polyopiaria corticifera of Lamarck properly limited. The Alycionea are equivalent to Lamark's Polypi tubiferi, with Alcyonium added, as Latreille has very properly done (Familles Naturelles, p. 543). We shall supply under the title Sarcoidea what is required in addition to the article Alcyonium. Pen- natularia and Tubifera form separate articles, and some general observations may be added under Zoophyta.

The Corallia, or true corticiferous Polyopiaria, are thus explained by Blainville:

*Animals hydroid form, with internal ovaria, and eight (pinnated?) tentacula irregularly scattered on the surface of a compound polyparium, formed externally of a living gelatinous-cretaceous substance, and internally of a solid horny or calcareous axis, concentrically laminated. The base of attachment is large.*

**Genera.**

Corallium, Lamarck.

<table>
<thead>
<tr>
<th>Cells immersed in a thin external fleshy integument; axis thick, stony, solid, striated, ramified, and fixed by a broad base.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Example, Corallium rubrum (Gorgonia nobilis, Linn.). Ellis and Solander, pl. 13, fig. 3, 4.</td>
</tr>
</tbody>
</table>

This, the only species, is the common red coral of the Mediterranean.

Mopsea.

<table>
<thead>
<tr>
<th>Animals with eight ramulose tentacula. Cells immersed in the integument. Axis stony, articulated, the articulations ramified, and separated by horny intervals giving origin to branches.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Example, Mopsea dichotoma (Isis, auct.).</td>
</tr>
</tbody>
</table>

Melitsea, Lamouroux.

<table>
<thead>
<tr>
<th>Animals unknown, scattered in a soft, fleshy, thin integument. Axis arborescent, ramified, composed of stony stratified articulations, separated by spongy tamarid intervals. (Coloured red.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Example, Melitsea coccinea. Sol. and Ellis, tab. 12, f. 5. Gorgonia.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Animals with eight ovarian orifices; cells scattered in a thin integument; axis plant-like, solid, of a horny substance, fixed by a wide base.</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Cells not prominent.</td>
</tr>
<tr>
<td>Example, Gorgonia patula. Ellis and Solander, tab. 15, fig. 3, 4.</td>
</tr>
</tbody>
</table>

| B. Cells prominent, pustulose. |
| Example, Gorgonia flabellum. Ellis, 'Corall.,' tab. 26, fig. A. |

C. Cells prominent, recurved.

| Example, Gorgonia florida. Muller, 'Zool. Dan.,' t. 137. The fossil species from transition strata, referred to this genus by Goldfuss, are mostly transferred to Retepora and Fenestella. |

Eunicas, Lamouroux.

<table>
<thead>
<tr>
<th>Animals with short tentacula. Cells mammillated, dispersed or ranged in lines on the surface of the branches. External integument thick, cylindrical; axis horny. (This genus is not adopted by Lamarck.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Example, Eunicas mammosa, Lamarck. 'Polyp. flex.,' pl. 17. Funicula, Lamarck.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Animals papilliform, ranged in lines alternately on each side along a very slender body, composed of a thin integument and a horny axis. (Lamarck placed the genus among the Pennatularia.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Example, Funiculina cylindrica, Lamarck. Blainville, pl. 50, f. 4.</td>
</tr>
</tbody>
</table>

Isis.

<table>
<thead>
<tr>
<th>Animals very small, abundantly scattered in the soft thick fleshy integument. Axis arborescent, composed of striated calcareous articulations separated by horny intervals. Base attached.</th>
</tr>
</thead>
</table>

Example, Isis hippuris, Linn. Ellis and Solander. 'Zooph.,' tab. 3, fig. 1-5. There are a few fossil species from tertiary strata.

Plexaura, Lamouroux.

<table>
<thead>
<tr>
<th>Cells not prominent, immersed in a very thick integument, of a substance like cork when dried; axis arborescent, often dichotomous, horny, fixed.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Example, Plexaura suberosa. Ellis, 'Corall.,' tab. 26, P, Q, R.</td>
</tr>
</tbody>
</table>

Muricea.

<table>
<thead>
<tr>
<th>Animals forming prominent zonial mammillae of a squamose and tubular structure, scattered on the surface of the subdistichous branches of a plant-like polyparium. Integument thick, axis horny and cylindrical except at the origin of the branches.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Example, Muricea muscicata, Lamouroux. 'Expos. Mém.' tab. 71.</td>
</tr>
</tbody>
</table>

Primnoas, Lamouroux.

<table>
<thead>
<tr>
<th>Animals forming prominent elongated mammillae of a squamose structure; polyparium dendroidal, dichotomous; integument thin; axis horny and very hard.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Example, Gorgonia lepadiifera, Linn. Blainville, pl. 67. From Norway.</td>
</tr>
</tbody>
</table>

Gorgonia lepadiifera.

*Antipathes, Pallas.*

Animals scattered in a thick gelatinous integument.
which falls off on drying); polyparium horny, flexible, solid, often spinose, branched. Pallas says there are external tubercled ovaria. Mr. Gray assigns to them six tentacula.

Example, Antipathes ulax. Ellis and Solander, tab. 19, f. 7, 8.

Cirrithes, Blainville.

Animals very small, with six wrinkled tentacula (not pinnated?) immersed in a thin gelatinous integument; axis horny, simple, fistulous; polyparium conical, elongated, cirriform, with rows of spines. Mouth projecting and lobed.

Example, Antipathes spiralis, Linn. Ellis and Solander, tab. 19, fig. 1-6.

POLYPLANYPHORA. [Crinoids.]

POLYPELECTRON. [Pavoniæ, vol. xvii., p. 337.]

POLYPODIA'CEÆ are one of the chief divisions of the natural order of ferns, and may be conveniently taken as the type of the whole. They constitute the highest form of Acrogenous or Cryptogamic vegetation, and are regarded as approaching more nearly to Cycadaceous Gymnosperms than to any other part of the vegetable kingdom now in existence.

They are usually herbaceous plants, with a permanent stem, which either remains buried and rooting beneath the soil, or creeps over the stems of trees, or forms a scarcely moveable point of growth round which new leaves are annually produced in a circle, or it rises into the air in the form of a simple stem, bearing a tuft of leaves at its apex, and sometimes attaining the height of fifty or sixty feet.

The interior of the stem consists of a centre of cellular substance, which often disappears, and among which bundles of fibro-vascular tissue are sometimes mixed; beyond the cellular centre lies a zone of woody hard plates, which are much folded and plaited, which communicate with the pellodes of the leaves, and which commonly present a horse-

which is in reality a merely hardened portion of the genera, cellular tissue of the trunk.

The stems seem always to produce roots in great quantities from their surface, even when elevated in the air; such roots are more especially met with near and under the ground, where they form a stratum of some thickness, acting both as feeding organs and as an external protection; on all tree-ferns they appear upon the stem at least in the form of tubercles; and in Cibotium Billardieri they cover over the whole surface from the top to the bottom with a dense layer several inches deep.

The surface of tree-fern stems may be taken to represent that of the order in general. It is always marked with scars of considerable size, having either a lozenge form or that of an irregular oval, and bearing within their area evident traces of the fracture of woody plates which passed from the stem into the leaves.

Portion of stem of Chnoophora excelsa.

These scars lengthen as the stem increases in age, till the lozenge or oval form is entirely destroyed; the scars then become separated to considerable distances, and extended into long and often irregular and indefinite spaces separated by deep furrows. Hence it happens that the appearance of the upper and lower end of the same tree-fern stem is so dissimilar, that they would not be supposed to belong to even the same species. Below the scars, or interposed among them, are found openings down into the interior of the stem, filled with pulverulent matter, and of unknown use. They appear to be of the same nature as the apertures into the superficial cells of Sphagnum, or more especially as the perforations in the rhizomes of Nymphaæ. The next figure shows the appearance of such apertures in Alsophila vestita.

Section of stem of Alsophila vestita.

The whole of these parts are covered over with a hard cellular integument, which stands in the room of bark, and
Although tree-ferns are unknown in any countries except those having either a damp tropical climate, or at least an equable mild temper and humid atmosphere, yet the common ferns of this country, whose stems, vulgarly called roots, are formed under ground, exhibit the same kind of organization as that just described, only in a less conspicuous manner. It does not therefore follow that the remains of tree-ferns found in this country in a fossil state prove Great Britain to have had formerly a tropical climate, especially as the number of such remains hitherto met with has been extremely small; the utmost value that can be assigned to their evidence is that of probability. In those tropical lands where the tree-fern acquires its full size, as for example Brazil, the Philippines, Pitcairn's Island, &c., it becomes one of the most majestic and graceful objects, having an enormous plume of the most delicate and verdant foliage at the extremity of a lofty flexible stem, which sways beneath the gentlest breezes.

The leaves of ferns, called their fronds by Linnaeus, are inserted upon the stem by an angular base, which is never extended at the sides into a sheath, as in palms; they are often of very considerable size, and cut into a multitude of divisions by repeated pinna—this is especially the case with those of tree-ferns. The leaves are however often very small, and undivided. They are penetrated by veins, which are either simple or divided in a forked manner; many instances of netted leaves are however known, more especially in the genus Hemionitis. Their surface is provided with stomata, or breathing pores.

The fructification of ferns consists of hollow cases, called sporangia, generated upon the surface of the under side of the leaves, or below its epidermis, which latter is then ruptured in a definite manner, and the portion so divided from the rest is called the indusium. Each sporangium contains a number of granular particles, or spores, by means of which the fern is multiplied. There are no truces of sexual organs; for although Hodwig and others have fancied that they found male organs in various parts of the back of the leaves of ferns, such observations do not at all agree with each other, and have met with but little credit. The most common opinion is that certain small bodies of a cellular transparent texture, found among the sporangia when young, are really stamens; but although he existence of such organs is well known, there is not the smallest evidence of their possessing the attributes of a stamen.

The number of ferns known to botanists is considerable, and their classification has been found a subject of great difficulty. It has been attempted, with various degrees of success, by Swartz, Smith, Kaulfuss, A. Brongnarti, Schott, and others; the most recent and apparently the best classification is that of Presl, published under the name of Tentamen Pteridographiae, at Prague, in 1836. See also Mohl, De Structura Pterium; A. Brongniart, Histoire des Végétaux fossiles, i. 392; and Endlicher, Genera Plantarum, p. 58.

POLO—A morbid growth attached to the interior of one or other of the mucous canals, by a more or less narrow pedicle. Polypi occur most frequently near the orifices of external communication of the mucous canals, as in the uterus, the fauces, the larynx, and the nose. A description of those that grow in the last of these situations may serve for all.

Polypi of the nose are of four kinds, which are named respectively, vesicular, gelatinous, fibrous, and malignant. Vesicular polypi are grey or yellowish transparent vesicles containing a clear watery fluid with a little mucus; they are very soft, easily break down when they are pressed, and are liable to considerable increase of size when the evaporation from them is decreased in damp weather. They appear to consist of enlarged mucous follicles. Gelatinous polypi are more solid growths, consisting of dull white masses attached to the mucous membrane of the nose, and themselves covered by a fine but rather tough membrane. They are composed of an excessive growth of the mucous membrane infiltrated with fluid, and having a few fibres running through its substance. Fibrous polypi are still more solid growths; they consist of a dense fibrous and vascular tissue, which it is often difficult to cut through, and which is sometimes converted into bone. They are usually intimately connected with the deeper parts of the mucous membrane. Malignant polypi are growths of a cancerous nature from the mucous membrane, which have received the name of last from having the same situation as the preceding than from their similarity of form. They may assume the characters of simple or scirrhous cancer, but more commonly they have those of the soft or medullary variety [Cancer] which is frequently called fungous hemastodes.

The common symptoms of all polypi of the nose are that the patient is unable to breathe through the nostril in which they are placed, and has a nasal voice; there is usually a discharge of watery mucus, a loss of smell, and a diminution of the power of taste. If situated far back in the nose, they may cause deafness or obstruct the swallowing of food. They even render the breathing difficult. The kinds described produce worse effects than these, for their growth is restrained by the firm tissues of the nostrils; but the last and firm varieties will continue to increase, expanding the bones and other tissues of the nostrils and face into huge and hideous swellings, and producing death either by their ulceration, or by their pressure on the vessels of the brain, or on the brain itself through the base of the skull.

The most usual situation of polypi is in the upper and back parts of the nostrils; and almost always on the outer wall, the septum being very rarely affected. In their increase they mould themselves to the form of the passages through which they are situated, and at last protrude at the external side through the anterior openings or backward into the fauces.

The growth of vesicular polypi is usually connected with a generally disordered state of the health. They seldom require to be removed by operation; the patient should take mild alteratives and tonics medicated with negatives, and lotions containing alum or sulphate of zinc, or some equally powerful astringent, should be frequently injected into the nostrils. When the polypi are thus destroyed, anotheruação containing nitrate of mercury, or sal volatile powder, or some other stimulant, should be rubbed on the membrane where they were seated. Gelatinous polypi are not usually benefited by the preceding plan of treatment; although it is very useful to remove them from growing again. They must be pulled from their attachment by forceps, which should have rough blades, and, if possible, be placed around the pedicle of the growth, and withdrawn with a kind of twisting motion. All the
polypi being thus removed, the mucus membrane should have some powerfully astrin gent lotion or ointment applied to it. The fibrous polypi usually require a more difficult operation for their removal; when they can be withdrawn by the forceps, it is only with much difficulty, from their being seated far back in the nostrils, and with some violence and danger of hemorrhage. In some cases a ligature may be tied round the base of such a polypus so as to make it slough off; in others they must be cut out with the knife or scissors. The choice of these operations must be made according to the circumstances of each case. After their removal, the same means should be adopted to prevent their return as in the preceding cases. The malignant growths in the nose, like those in other parts of the body, where their early and complete removal cannot certainly be accomplished, had better be treated only by palliative measures.

POLYSTOMELLA. [FORAMINIFERA, vol. x , p. 348.]

POLYTHALAMACEA. Under the title of CEPHALOPODA will be found notices of the principal modes of classification adopted for the numerous fossil and few recent testaceous bodies allied to Nautilus, Spirula, and Sepia. Many of the genera of this great division of molluscan animals are also noticed in their appropriate places, as BACULITIDES, BELLIMNETIS, BELLAMPHRON, CORNU AMMONIES, GOMATRIS, and, above all, Nautilus, by the investigation of which, in a living state, Professor Owen has been enabled to clear away much of the obscurity which hitherto the history and affinities of fossil Cephalopoda.

It is proposed to sketch in this article a brief outline of the state and progress of investigation into the affinities and geological distribution of the leading groups of the Polythalamaceae Cephalopoda, which may be ranked in the following four families, viz.:

Tetabranchiata. Fam. 1. Nautilide.
2. Belemnitide.

So large a proportion of the components of these families are in a fossil state, that it is necessary to base a view of their relations on the conservable testaceous parts principally, always however keeping in mind the probable uses of the parts, as determined by investigation of the recent forms most nearly comparable.

Nautilide.

Three principal considerations have guided the geological naturalists, to whom principally the divisions of the Nautilidal Cephalopoda are due, in the arrangements which they have proposed:—

1. The spirality of the shell. In Nautilus it is involute or convolute; in Orthoceras straight; and between perfect involute and absolute straightness, we have every degree of curvature.

2. The form in which the septa, whereby the cavity becomes concomerate, meet the inner surface of the shell. In Nautilus most gentle and simple curve; in many Orthocerata it is waved; in many Cymelminus undulated, or deeply and angularly notched.

3. The situation of the siphuncle on the disk of the septa. In most Nautilis the siphuncle is nearly in the centre of the disk; in Cymelminus it is on or near the inner or rentil edge; in Cyrtoceras generally near to the outer or dorsal line.

To these Mr. C. Stokes (Geol. Proceedings) has added, in the case of the Orthocerata, the consideration of the form of the siphuncle itself; and Mr. Broderip (Silurian Researches) has noticed, in the character of Phragmoceras, the form of the aperture and last chamber.

It is difficult to be satisfied, while attempting the arrangement of Nautilial Polyalamines, with following out to its remote consequences any one of these principles exclusively. From the general figure we derive three main groups, viz.:

A. Orthoceras, &c. Straight.
B. Cyrtoceras, &c. Incurved or convoluted near the apex, ending in a straight or recurved limb.
C. Nautilis, &c. Altogether convoluted.

A. Orthoceras. These groups, which take in Orthoceras not the septal edge, but the siphuncular structure; and, with Mr. Stokes, separate Ormoceras, because of its tumid and irregular siphuncle; and with Bronn, Actinoceras, because of its radiating siphuncular processes.* Species of Ormoceras belong to the upper Palaeozoic strata generally, viz. to the upper Silurian rocks of Murchison, the Devonian and carboniferous systems in Europe and North America, above which they are unknown. Actinoceras have the same or a more limited range. Orthocerarities proper (excluding curved species, like O. paradoxicum, Sow.) have the same geological range, and exhibit so great variation in the form of the cone, the disposition of the septa, and situation of the siphuncle, as to furnish many helps to recognise the otherwise indistinguishable forms of the numerous species which fill the older rocks.

For example, the cone is nearly a circular base, the septa are transverse, and the siphuncle is nearly central in O. giganteum and O. incisum of the mountain limestone; the cone has an elliptic base, oblique septa, and an excentric siphuncle in O. laterale, O. Brenyi of the mountain limestone, and O. immersum of the Ludlow rocks.

The last chamber and the mouth also vary in form. In one species from the Ludlow rocks the form of these parts has suggested to Mr. Sowerby the generic name of Gomphoceras (Silurian Researches); and another, from the mountain limestone, has received the specific designation O. fusiforme.

Orthoceras laterale. It may be remarked that the cases are few in which the apex of Orthoceras has been actually observed; in several cases of supposed straight shells, the apical part is seen to be curved; and it is our conviction that this is very much more common than the heedless application of Orthoceras would lead to suppose.

We have not mentioned in this review the Conularia of Miller, as being, though probably of this family, not sufficiently known. The following abbreviated characters may be useful to the geological student:

Orthoceras (sp. p., straight, combined with sp. o., a horn). Brenyi, a straight concomerate shell, with septa regularly concave toward the mouth, perforated by a simple nearly cylindrical siphuncle, either in or not far removed from the centre of the disk (never marginal).

a. Last chamber cylindrical, as O. giganteum.

b. Last chamber contracted toward the aperture, as O. fusiforme.

Ormoceras (sp. b., a broad, combined with sp. e.). Stokes, a straight concomerate shell, with septa as in Orthoceras, perforated by a siphuncle similarly situated, but much dilated in each chamber, and contracted at the parts where the septa are attached to it. The inner part of the siphuncle is split into chambers, corresponding in number with the chambers, and deeply indented in the middle, where the septa of the shell are attached to them; so that one-half of each division of the siphuncle is in one chamber, and the other half in the next chamber.

The typical species are from Drummond Island, in Lake Huron. (Stokes, in Geol. Proceedings, 1838, and Transactions, 1840.)

Actinoceras (sp. r., a ray, combined with sp. e.). Stokes, a straight concomerate shell, with septa as in Orthoceras, and siphuncle shaped, as to its external face, as in Ormoceras. Within the siphuncle is a continuous tube, which appears to have been capable of expansion and contraction, and is furnished with vestigial radi, which connect the tube with the walls of the siphon. (Stokes, in
The species are from Lake Huron and other parts in Northern America, and Castle Espie in Ireland. (The genus Conoceras of Bronn is included in Actinoceras by Mr. Stokes.)

Conularia, Miller, a straight (or slightly bent?) pyramidal four-sided (conesmerated?) shell.

Conularia quadriradiata is a common shell in what were called transition rocks in Sweden, Wenlock, Dudley, &c.; and a similar if not identical species occurs in the carboniferous rocks of Costbrook-dale and Rutherford.

(Sowerby, in the Mineral Conchology of Great Britain; and Murchison, in Siluriian Researches).

B. In classing the bent or partially convoluted polythalamaceae, we may find advantage in attending to the situation of the siphuncle. For example, the siphuncle is subdorsal or approaches the outer line of curvature in Cyrtoceras, Goldfuss, and Gyroceras, Meyer; it is subcentral in Lituites, Bryen; and it is subcentral or approaches the inner line of curvature in the genus Phragmoscoras, Broderip.

The geological distribution of these forms is nearly as in the Orthocones. They are all peculiar to the strata below the new red system; and mostly occur below the carboniferous or mountain limestone. Phragmoscoras prevails in the Ludlow rocks; Cyrtoceras especially abound in the strata of South Devon, the Eifel, and the mountain limestone; and Gyroceras and Lituites follow nearly the same rule; a few species of Lituites occur in the Silurian rocks.

We subjoin figures of characteristic forms of Cyrtoceras, Lituites, and Phragmoscoras; of the latter, two figures to show the singular contraction of its aperture.

The brief characters of these generic groups which follow may be sufficient for the recognition of perfect specimens, but such are rarely found in the older rocks, where alone they occur.

Cyrtoceras (esp. curved, and eip, a horn), Goldfuss. Bent, arched, or partially convoluted, the free end being sometimes elongated and straight. Septal edges seldom free from a slight waving; siphuncle subdorsal, or even marginal, seldom quite round; aperture nearly orbicular. Example, Cyrtoceras depressum. From the Eifel.

Phragmoscoras ventricosum.

The septa are simply concave, with their edges even, in most Nautili; but in some species (N. bilobatus, from the coal formation and mountain limestone) they are deeply undulated, as in the simplest Clymenia (Goniatites); a remarkable fossil from the London clay (Nautilus ziczac), deeply and angularly folded, nearly as in some Goniatites. Finally, in the Clymenia of Count Munster, all having a ventral siphuncle, the septal edges is simply waved, or has rounded inflexions, angular bands, or a mixture of these in the same shell.

It is evident from these facts that this part of the classification needs much reconsideration, and that several new genera must be constituted.

The geological distribution of these really convoluted Polythalamaceae is interesting and remarkable. The genus Nautilus, as commonly used by English ornithologists, is found in many of the Palaeozoic strata, but not in the older ones, in all those of middle age, in the tertiarys, and in the actual ocean. But in the more antient strata, either by a dorsal or a ventral siphon, by peculiarly waved septa, or a discoid figure, the species are widely, and, we believe, generally, disjounged from those of later date. Clymenia are only known in a distinct and varied development in strata of the age of certain Devonian and Cornubian rocks, principally at Sith. Patherwin in Cornwall, and in strata believed by Murchison and Sedgwick to be coeval with them, on the flanks of the Fichtelgebirge.

Ammonitidae.

Following nearly the same plan as that used for the Nautilidae, we find, from the general figure of these shells, the following divisions:
A. Baculites, straight.
B. Hammites, Tropasum, Crioceratites, partially convolute, the enlarged end straight.
C. Scaphites, partially convolute, the free end recurved.
D. Turritites, spiral round an axis (usually sinistral).
E. Ammonites, Ceratites, Goniatites, convolute or involute.

By referring to the article Goniatites the student may see in what way the subdivision of the only large group of this series (Ammonites, Ceratites, Goniatites, which include many hundred species) may be best effected.

In the article Cornu AMMONI reference is made to a table of the geological distribution of this group, analysed according to the method of Von Buch.

To illustrate this view of the subject we subjoin a few further examples of characteristic Ammonitic sutures, selected from a large series which we prepared a few years since.

Ammonites venustus. (Phillips.) From Speeton clay.

Ammonites subulata. (Sowerby.) From Kellovay rock.

Ammonites Walcottii. (Sowerby.) From the Lias.

The group A (Baculites) is found chiefly if not wholly in the cretaceous strata (Maastricht, and the chalk of the south of France).

The group B is found in chalk, green-sand, and gault almost wholly (Folkestone, Cambridge, Speeton); but perhaps the species of ammonial shells called A. ambriatus and A. cornucopiae, from the lias of Yorkshire, should be ranked in the division, as they in fact are, by Mr. Sowerby, under the title of Tropasum. (They are not known to have a straight elongation.)

The group C is very similarly circumstanced, only Scaphites Yoannii being, as far as we know, found in strata below the greensands.

The group D belongs also to the cretaceous rocks.

But the large group E has a prodigious geological range, being found in the whole series of fossiliferous strata from nearly the earliest of the Palaeozoic rocks until we arrive at the tertiary series, in which, we believe, no species has really been found, and none have been seen in a recent state. The whole of the Ammonitides then have vanished from the oceans, and their way of life is to be inferred from analogy only.

Spirulidae. These were partly internal shells (as probably also some of the Ammonitid, especially Scaphites, were). Spirula nodosa, Bronn, is certainly not of the genus Spirula, nor is there any reason to admit the occurrence of any of the group below the tertiary strata.

Belemnitidae.

The genus Actinocamax of Miller, though adopted by Voltz and Blainville, is imaginary, being really only the retial or apical portion of the Belemnite separated from the concamrinated portion at a point where nacreous and easily decomposing lamina prevail, a little behind the apex of the nautilus. This is, we think, quite certain from careful observation of the Belemnitides quadratus and other allied forms in the chalk of Northfleet, and Belemnitides jaconum of the Speeton clay, the artificial parts of which have been figured as Actinocamaxes by Miller and Voltz. Pseudobreus is perhaps differently circumstanced, but its characters are very obscure.

The genus Belemmites is so abundant in the secondary strata of Britain, that at least forty species are possessed by the writer of this article, of which the greater part have not been mentioned in English works on geology. Many other species occur in strata of the same age on the continent of Europe, in India, and in America. It is possible to distinguish by Belemmites alone the leading members of the English and European cretaceous systems of P. C., No. 1190.
Malchisedek, king of Salem, and Abimelech, king of the Philistines, both Canaanites, were worshippers of one God, and the God of Abraham himself. The ancient Persians might have been free from polytheism in Abraham's days; but in the reign of David Sabians, or worshippers of the host of heaven, and afterwards Magians, or worshippers of fire. As Magians they held that there are two principles, one the cause of all good, and the other the cause of all evil; the one producing darkness and the other light; the former, according to Plutarch (De Isid. et Orr., § 46), was called Ormasedes, and the latter Arimanus. Among the antient Arabians we find Job and his friends, and Jethro, the casid of the Jews, worshippers of one God; and in the time of Job the worship of the heavenly bodies was practised, as is plainly indicated in Job, xxxi. 26, 27. The Egyptians, in Abraham's days, seem to have had a religion not different from his; but in the time of Moses polytheism had become established among them; for many provisions of his law refer to this fact, and are intended especially to guard the Israelites from imitating the polytheism and idolatry of Egypt. Cudworth is of opinion (c. 4, § 18) that polytheism originated in Egypt, but such an assertion is incapable of proof. The Greeks and Romans acknowledged one God, under the names of Zeus (Zeus) and Jupiter, as supreme over all other gods; and they believed for the most part in the same destinies of man and of fate. Yet these inferior beings were worshipped as gods, and the system was essentially polytheistic.

Cudworth has written at great length to show that the antient philosophers in general, though they seem to have been polytheists, were not really such, and that they worshipped mentally one Supreme Being under different names. But however this might be, the popular notions were not so refined. Wherever the philosophers aimed to be polytheists, the people have been polytheists in reality; and, as Philo-Judaeus says (De Ebr. et Lactat.), 'Polytheism in the minds of the ignorant is atheism."

The progress of polytheism seems to have been, or might have been, the same as the following:—men looked up on the sun and the moon, and the whole of the heavenly bodies, with fire, water, earth, and air, as, in some way or other, representing the Deity. Then they gradually substituted the representatives for the Deity himself, and paid adoration to them. Next, in wishing to preserve the memory of departed heroes or great men under the form of pillars or images, they fell into the practice of defying or worshipping them. Then they regarded certain of the brute creation, as other serviceable and so to be reverenced, or noxious and so to be dreaded, and they converted them into gods. Thus it was also with respect to mountains, rivers, and other inanimate objects. And this was not all; they imagined a relation between the Deity and the prosperity of their race of men, or of a particular group of men, some of which were of a most debasing character.

Wherever the Christian religion has been established, polytheism and its attendant evils have disappeared; but there is a great portion of the world in which polytheism prevails; and the miseries are inconceivably great which millions of the human race are still voluntarily inflicting upon themselves with a view to propitiate the favour of imaginary deities.

(Cudworth's Intellectual System; Henry More's Mystery of Godliness; Shuckford's Connection of Sacred and Profane History.)

POLYTRA, a genus of MILLIPIDES.

POLYTROPA, Mr. Swainson's name for a genus of Maricidae, placed by him under his second subfamily Scylophinae, with the following.

Generic Character.—Bucciniform; but the base narrow, and ending in a straight or contracted but rather short channel; spire longer, or as long as the aperture; external foliaceous or terebricate; inner lip flattened, as in Purpura; basal notch small, oblique; no internal channel.

Example. Polytropa crispata. (En. Mth., 419, f. 2.)

POLYTRA. [POLYPHIARA].

POLYXENES. [FORAMINIFERA, vol. x, p. 348.]

POMA, F. I., and ROSSACER.

POTATORIUM. [M. GERULUM, vol. x, p. 123.]

POMBAL, MARQUIS DE. DOM SEBASTIAO JOSE' DE CARVALHO, Count d'Oeiras and Marquis de Pombal, was one of the most able public men that have ever presided over the councils of the Portuguese nation. He was born in 1699, at Soura, a village in the territory of Coimbra, of an old and noble family, though not of the first class. Having completed his early studies in his native village, he entered the University of Coimbra, for the purpose of studying the bar. Young Carvalho followed a course of lectures; but the quiet pursuits of the law being incompatible with the vivacity or rather the turbulence of his mind, he determined on放弃法律生涯, but it is certain that he quitted the corps in which he served, and led a private life till 1739, when, through the influence which his uncle Paulo Carvalho had with Cardinal Motta, a person much in favour with John V., he was appointed extraordinary envoy to the court of Lisbon, and afterwards to Vienna, as mediator between the empress Maria Theresa and the Pope, to settle the disputes which had arisen in consequence of the suppression of the archbishop of Aquitaine.

Whilst in that capital, Carvalho had the good fortune to marry a lady of high rank and influence, the Countess Daun, niece of the General of the same name who figures prominently in the history of the War of the Austrian Succession, and who was friendly to the great Prussia. On his return, the queen of John V., who was an Austrian princess, became so much attached to her countrywoman, the lady of Carvalho, that for her sake she prevailed on her son, nameless as to his private character, to bestow on him a vast power, in consequence of which Carvalho was entrusted by Joseph I. with the direction of foreign affairs.

Elevated to this high station, Carvalho began to display his great administrative talents. His admirers have gone so far as to compare him with Richelieu; while his enemies, unable to deny the merit of his administrative conduct, have attributed it to ignoble and selfish motives. But both these extremes are equally distant from the just and true. Carvalho was either a profound politician as Richelieu, but the political relations and rank of such a kingdom as Portugal could not and did not offer him a sphere in which to display them; but in the internal and economical administration of the kingdom, in discernment, activity, and legislative abilities, he has no superior. After his promotion, which took place in 1750, Portugal may be said to have been regenerated. He favoured the establishment of several manufactures, and encouraged the art of printing and agriculture; he introduced into the university of Coimbra a system of studies which substituted, for the mere study of the classics and antient languages, the cultivation of the physical and mathematical sciences; he furnished the University of Coimbra with a botanical observatory; he introduced into Brazil the cultivation of coffee, sugar, cotton, rice, indigo, and cacao; he created the companies of Pernambuco, Paris, and Maranhao, and established one in 1752, which even idlers and loungers were not allowed to promenade the streets.

With all his great qualities, which command our esteem and admiration, he was detected both at home and abroad. Those who hitherto had lived and enriched themselves by the abuses that had crept into the various branches of administration, as well as those who suffered from the severity of his ordinances, were his declared enemies. He checked the obnoxious power of the Inquisition, and banished the Jesuits from the country. In the Portuguese dominions it was the policy of the latter measure, it was carried into effect with great inhumanity. [JESPIT, p. 112.] His interference with the monopoly which foreign merchants had acquired in the commerce of Portugal rendered him an object of detestation to foreigners, and particularly the English; still all his measures had for their object the prosperity of the country, which he effectually promoted, so far as to place Portugal on an equal footing with other European states.

The Marquis of Pombal however is not without reproach. His unremitting persecution of the nobility, and his merciless conduct towards the family of the Tavores and every individual whom he suspected of having had any part in the attempt against the person and fatherland of the brilliancy of his career. It is asserted by some that he conceived a great dislike against the nobility from the time of his first marriage. His first wife, Dora Therese de Noronha Almada, belonged to one of the most antient
POM 379 POM

families of Portugal, and was the daughter of the only heiress of the Alvarads; while he was nothing, and had no other recommendation than a handsome figure, and the power which superior intelligence invariably gives. Her relatives accordingly made the strongest opposition to the marriage; but Don Carlos, by which circumstance is attributed the hatred of that class.

On the death of Joseph I., the queen, who considered that Carvalho had occupied that place in the affection of the king which she alone ought to have filled, and had likewise been so far fortunate as to account of his persecution of the nobility and the Jesuits, ordered him to retire to Pombal, where he died in the eighty-first year of his age. The finest parts of Lisbon still bear testimony to the value of his services, and the elegance that is observable in the public designs after the earthquake. He was created Count d'Oeyras in 1759, as a testimony of the royal regard for the zeal which he displayed when the attempt was made to shoot the king Joseph I.; and on his effecting a reconciliation with the pope at a much later period, his grateful master created him Marquis de Pombal. Although he is accused of enriching himself by means unworthy of his rank, no person who is acquainted with his private habits, with the method how he had managed his business, and how he lived, may doubt of his integrity. When he retired from the ministry, he left about forty-eight millions of cruzados in the public treasury, and the kingdom was in an advantageous state. The only good which the government of Portugal had never had before.

(Recordações de Jacomo Ratton; Memoirs of the Marqués of Pombal; Chalmers's Biographical Dictionary; Breytenbacher's Dictionary; Biographie Universelle.)

POME, in botanical language, signifies a fleshy inferior many-celled fruit, such as that of the apple, pear, &c. It differs from a berry in its seed not being buried in pulp.

POMEGRANATE (Punica.)

POMERANIA (in German, Pommern), one of the eight provinces of the Prussian monarchy, is situated between 52° and 54° N. lat. and 12° 30' and 18° E. long. It is bounded on the north by the Baltic, on the east by West Prussia, on the south by the River Peene, and on the west by West Pomerania and East Pomerania.

It is a long tract of coast, extending 200 miles in the Baltic, and varying in breadth from thirty to sixty, and, in some places, to eighty miles. The area is 12,000 square miles, and it is divided into the three governments of Coeslin, Stettin, and Stralsund.

Pomerania is one of the lowest and flattest countries in Germany; only a few hills of moderate height break this continuity of level. The hills of the Gollenburg, between Cösin and Zonow, which is the highest, has scarcely an elevation of 300 feet. The soil consists of sand; and, along the coast, of sea-sand, which former inundations and repeated storms have spread over large parts of the country. Formerly carved in the past, Pomerania are protected against the sea by sand-hills and dikes. Here and there this sand is mixed with clay, or passes into a black fertile loam, especially in the government of Stralsund. The island of Rügen, which belongs to this government, has very broken coasts, but the heaviest and best soil of all Pomerania.

The province is crossed in its broadest part by the Oder, which, flowing through a marshy tract, divides into many arms or channels, one of which, the Great Regelitz, forms, toward its mouth, the great Dammer Lake, and, together with the main stream, falls into the extensive inland water the Fische Haft, the eastern part of which is called the Weichbild. The water of the Fische Haft is fresh, and is only during the prevalence of the north wind that it is rather brackish, and considerably higher, owing to the influx of the sea. The two great islands of Usedom and Wolin separate it from the Baltic, with which it is connected by three outlets: on the east by the Divenow, which falls into the sea between Wolin and the continent, after forming a great lake called the Kaminische Bolen; in the middle by the Haff of Zonow, and the west by the Peeno, between Usedom and the continent. These three outlets might be called the mouths of the Oder. The Ucker from Brandenburg, and the Peeno from Mecklenburg, fall directly into the Fische Haft. The Ilmha flows into the Dammer Lake. Most of the other rivers fall, after a short course, into the Baltic. There are many small lakes: that of Malino, which is celebrated for its lampreys, is one of the largest. The navigation on the Pomeranian coast is dangerous, owing to the want of harbours; there being only three safe ones, Stralsund, Swinemunde, and Colberg.

The climate of Pomerania is cold, and the weather is changeable: storms on the coast are not uncommon. The agricultural productions of the country are:—1. horses, horned cattle, sheep, goats, cattle, swine, common sheep (especially geese), sea and river fish, and bees; 2. corn, peas and beans, potatoes, fruit, timber, flax, and tobacco; 3. alum, bog-iron, salt, turf, and amber. The soil in some parts is so calcareous that the cultivation of agricultural produce in a generally backward state; notwithstanding the fertility of the land, and the climate unfavourable, that the agriculture is in a very backward state; notwithstanding the industry of the inhabitants, no great improvement can be effected. The Pomeranian however has done every thing that was possible for the promotion of agriculture. The country produces more corn than is required for home consumption. Sufficient flocks are grown for the use of the inhabitants; and fruit is so abundant, that large quantities, especially of apples, are exported. The breeding of horned cattle is carried on to a great extent; the flocks of sheep are numerous on the great estates; and all the country-people keep numbers of swine. The breeding of poultry is very profitable: immense flocks of geese are kept, the quills, feathers, and smoked breasts of which (celebrated in all Germany and the north of Europe by the name of Pomeranische Speckgläns) are most important articles of exportation. The Pomeranian forests are very extensive and extensive, and the flax and tobacco, which are of considerable profit; but the sea-fishing is not carried on to the extent that it might be. Of fresh-water fisk, large quantities, both fresh and smoked, are exported. The general kingdom of Pomerania includes: Some part of the soil at Torgelow; there are salt-works at Colberg; and some amber is procured, especially near Stolpe. The most important article is turf, of which about sixteen million tons (bricks, so they are called) are annually dug. There are no manufactures of much importance; but some Linnen however is made, and is a considerable article of exportation. What manufactures there are, are confined to the principal towns. [STARGOARD; STEPPIN; STRALSUND AND LNEFENDT] The trade is carried on partly by sea, partly on the Oder, and partly by land, with the neighbouring provinces. The exports include all the natural productions of the country; the imports are colonial articles, some manufactured goods, and there is also a great transit trade to and from the provinces on the Oder, especially Brandenburg and Silesia.

The inhabitants are by descent partly Slavonians and partly Germans. German peasants were brought into the country in the twelfth century, especially by the monasteries, and the dukes founded German towns and villages, to which they granted great privileges. Hence the Jews have been for a long time out of the race. Genuine Slavonian blood is now only to be met with in the north-eastern corner of the province, where these people preserve their own dialect of the Slavonic language, and will differ in manners and customs from their German fellow-countrymen. The nobles are numerous, chiefly consisting of German families who have settled here since the twelfth century, and possess several important privileges, though they have been much abridged of late years. The vassalage of the passants was abolished by the late king Frederick William III. The population, according to Dietrich (1838), was 941,193, that is, on an average, 1560 to one German or twenty-one English square miles. A report presented to the king by Doctor Gerstner (1857) gives the population of 1856, in 25, 293 villages, 17, 491. 2, 236,000. In the city, where, in 1816, there were only 909 persons on a German square mile, and in 1838, 1300. The great majority of the inhabitants are Lutherans: there are a few French and German Catholics. A very considerable number of Jews, and 4200 Jews. On the 15th of June, 1824, the 700th anniversary of the introduction of Christianity into Pomerania was celebrated with great solemnity in the whole province.

Pomerania was formerly a considerable part of the ancient kingdom of the Wends, or Vandals. From the year 1062 it had its own dukes, of whom Boleslaus X., or the Great, is one of the most distinguished. The Christian religion was introduced in the twelfth century. The first Pomeranian converts were baptised on the 15th of June, 1124, by Otto (Otho), bishop of Bamberg, at a place called Ottobrunn (Otho's Well). The line of the dukes became extinct on the death of Boleslaus XIII., in 1367.
last female descendant of the Pomeranian dukes was married to Prince Croy, after whose death she returned to Pomerania, where she died, on the 19th July, 1660, having instituted a festival to be kept every ten years in memory of the line of princes which became extinct in her person. On the death of the last duke of Pomerania, the electoral House of Brandenburg, conformably to a family compact, should have taken possession of the whole country; but Pomerania having been occupied by the Swedes during the Thirty Years' war, Prussia, at the beginning of the eighteenth century, took possession of part of the country, and in 1720, the Thirty Years' War ended, leaving Sweden in possession of Hither Pomerania, with the island of Rugen. Charles XII. of Sweden was however obliged to cede, by the treaty of Stockholm in 1720, the remaining part of the island of Rugen to Prussia. The island of Usedom and Wollin to Frederick William I., king of Prussia. Lastly, by a convention concluded on the 4th of June, 1815, Prussia obtained possession of the whole of Pomerania, which Sweden had ceded to Denmark as a compensation for Norway. In exchange, Prussia gave to Denmark,—1, the duchy of Lauenburg, which it had obtained from Hanover in exchange for East Friesland; 2, a sum of two millions of dollars, paying also 600,000 Swedish dollars which Denmark owed to Sweden; 3, it indemnified the Swedish holders of dotations in this province to the amount of 43,000 dollars annually; 4, it paid to Sweden 3,500,000 Swedish dollars, so that Prussia gave for this province to the Dauphin of Lorraine, the duchy of Lauenburg, 3,000,000 Swedish dollars, and indemnified the Swedish holders of dotations.

It is worth of remark, that the sum of three millions and a half of dollars paid by Prussia to Sweden for a province, which had been often the scene of wars and alternations of territory, was claimed by the present king of Sweden (Bermadotte) as belonging to himself. Of this sum he applied two millions to the service of the state, as an especial favour, and put ten millions and a half dollars to his private use (Stein, Geographisches Lexicon; Conversations Lexicon; Dietterici, Von dem Verkehr im Preussischen Staate und im Deutschen Zollverbande; Hassel, Handbuch.)

Pomponio, called Pomponius, was born in 1547, at Luton in Bedfordshire. He studied at Queen's College, Cambridge, where he was admitted to a Bachelor's degree in 1564, and to a Master's in 1568. Having entered into orders, he obtained the rectory of Maldon in Bedfordshire. In 1563 he came to London with the prospect of obtaining further preferment, but found Bishop Compton strongly prejudiced against him on account of some lines in 'The Choice,' which seemed to imply that a mistress was to be preferred to two. Pomfret, on this occasion, could not remove the bishop's objections, he was attacked by the small-pox, which carried him off in 1563, in his thirty-sixth year.

He published his poems in 1569, and some additional poems were published after his death by an anonymous friend. His poems had once many readers, especially 'The Choice,' in which he describes how he would live if he had a moderate independent fortune. He has given the history of a house and garden, of wines, of books, of friends, and of a female friend, for 'he would have no wife.' Dr. Johnson says that 'he has been always a favourite with that class of readers who, without vanity or criticism, seek only their own amusement.' We doubt if any class of readers now exists who could find amusement in reading such poems as those of Pomfret. They are deservedly neglected.

(L. Howat, the Poets.)

POMMERIA. [Pomerania.]

POMMERION, or, as it is written in inscriptions, POMERIUM. The Pommerion, according to Livy (t. 44), was a consecrated spot on each side of the wall of the city of Rome, where the tribunes of the Roman people met to hold the ceremonies of inauguration; and whenever the city was enlarged, the Pommerion was also extended. The space within the wall might not be built upon, and the space without the wall was devoted to agriculture. This definition of the Pommerion is true only where the Pommerion coincides with the real wall; since during the later times of the kings, and subsequently, the Pommerion was not confined to the wall. The Pommerion was that part of the city which was consecrated by Etruscan auspices, which belonged exclusively to the patricians; and thus the Aventine, which was inhabited by the plebeians, was never included within the Pommerion till the reign of the emperor Claudius (Aul. Gell, xii. 14), although it had long before that time formed part of the city. The Pomerium of Romulus, which is traced by Tacitus (Ann., xii. 24), included only the Palatine. The Quirinal hill is said to have been added by Numa (Dionys., Ant. Rom., ii. 62), and the Caelian by Tullius Hostilius, to the boundaries of the city, by which is probably meant that they were included within the Pomerium, or consecrated part of the city, since the actual fortifications were not completed till the time of Servius Tullius. The Quirinal and Viminal hills were added to the Pomerium by Servius Tullius (Liv., x. 44), and the Aventine, as already stated, by the emperor Claudius.

We learn from Tacitus (Ann., xii. 23) and Aulus Gellius (xii. 14) that the promiscuous only the latter is considered as the boundary of the city, from which it is only the Pomerium to extend to the Swedes who had enlarged the limits of the Pomerium, or which no one had used this privilege from the time of the kings to that of Claudius, except Sulla and the emperor Augustus. Other writers however say that it was done by Julius Caesar.

(Aul. Gell, xii. 14; Dion Cass., xiii. 50; Cic., Ep. ad Att., xii. 20, 33, 35.)

POMMERA, or MAINLAND. [DERNERTH.]

POMPADOUR, MADAME DE. [LOUIS XV.]

Pompéi, born at Verona in 1731, of a patrician family, applied himself chiefly to the study of the Greek and Latin writers, and became a good Hellenist. He translated into Latin the works of Cramer and the writings of Minutius Felix, which are esteemed as having been done in the Italian language, and has gone through more than ten editions. In 1785 Pompei was offered a chair in the university of Pavia, where he declined, out of attachment to his native town. He was intimate with Mafei, Torelli, and with the present M. Morando, who is the only translator of the Boccace in the present day. He was preceptor to Ippolito Pimenta, and also to two accomplished ladies of the same town, Elisabetta Mosconi and Silvia Curtoni Verza. Pompei died at Verona in 1785. His other works consist of 'Cantoni Pastorali,' which are much esteemed, and other Italian poetry, including some translations from the Greek, and of several dissertations. His biography has been written by his disciple Pinzotta, in a work entitled 'Alcuni Fontane, De Vita et Scriptis Hieronymi Pompeii.'

Pompeii, an ancient town of Campania, situated about thirteen miles south-east of Naples, in a plain at the foot of Vesuvius, through which runs the little river Barno. The town appears to have been once close to the sea, but is now nearly two miles from it, in consequence of the physical changes which have taken place in this district. It stood on an eminence formed by a bed of lava, which seems to have been raised up, and the town is now connected with the sea by several other places round the foot of Vesuvius, long before any of the eruptions recorded in history. Pompeii, as well as the neighbouring town of Herculanum, is said by Strabo (iv. 1) to have been originally a possible settlement of the Greeks, and then by the Tyrrhenians and Pelasgi. Afterwards fell under the power of the Greek colonies of Cumae and Parthenope, and lastly of the Samnites (about 440 b.c.), who made themselves masters of this coast as far as the mouth of the river Faro. About eighty years later the inhabitants of Campania threw off the yoke of the Samnites, and placed themselves under the protection of Rome. In the second Punic war the Campanians joined Hannibal, but were severely punished for it by the Romans, who brought the country under subjection. Pompeii however is not mentioned among the towns hostile to Rome. In the Social War (99 b.c.) the Campanians offended, and Pompeii, among them, joined the Marian Confederacy. At the end of the war several of those towns were severely chastised by the Romans. Stabiae, which stood within four or five miles south of east of Pompeii, was entirely destroyed, but Pompeii itself was preserved. No other town showed more of any importance is recorded of Pompeii, except a quarrel between the inhabitants and those of Nuceris on the occasion of a gladiatorial fight in the amphitheatre of Pompeii, which was said to be the cause of many of the misfortunes of the town.

The affair was brought before the emperor Nero, who adjudged that the Pompeians should be deprived of all theatrical amusements for ten years, a punishment which the Pompeians requested to be prolonged to twenty years. At this a fearful earthquake threw down a great part of Pompeii. A.D. 63. The following year, while Nero was singing at Naples, another earthquake occurred. At last, in the year A.D. 79, in the month of August, the first recorded eruption of Vesuvius took place, which is well known from
the letter of Pliny the Younger, whose uncle lost his life on the occasion. [POM]

In this eruption both Herculaneum and Pompeii were buried; the former under a mass of lava, Pompei under showers of stones, cinders, and ashes. The ceilings and upper stories of the houses, being chiefly of wood, were either burnt by the red-hot stones and cinders ejected from Vesuvius, or were broken down by the weight of matter collected on the roofs. The catastrophe was not so sudden but that most of the inhabitants had time to escape with their movable property: indeed it would appear that the town was not altogether buried in one eruption, but that this was the work of several consecutive eruptions, between which intervals the inhabitants returned to their homes and other public buildings of less note. The city was antiently surrounded by walls, of which the greatest portion has been traced, including six gates and twelve towers. The circuit of the walls is near two miles, and their thickness measures about one hundred and sixty-one acres. There were however suburbs, one of which, at the north-western or Herculaneum gate, is partly excavated, and is called the street of tombs, from a number of handsome tombs which have been discovered there. In the same locality, the villa of Diomedes, is in this quarter. On entering the gate the visitor finds himself in a long tortuous street leading to the forum. To the left of this street is the house called that of Sallust, which occupied a courtyard of about forty yards; and near it is the house of Pansa, which, with its court and garden, is about one hundred yards long by forty wide. These are the two finest private houses yet excavated, and they afford a good specimen of the interior arrangement of the dwelling-houses of the antient Romans. [ATRUM.] Near to the forum are the baths, in very good preservation, which appear to have been finished a short time before the destruction of the town. A description of them is given under BATHS.

Upon entering the forum the spectator finds himself in a large oblong area, about one hundred and twenty yards long by sixty wide or the equivalent area of the grand temple of Apollo at Ephesus, in which once supported statues, the ruins of temples, triumphal arches, and other public buildings. Around the west, south, and east sides there runs a Grecian Doric colonnade, some of the columns of which are standing; they are three feet three inches in diameter, and twelve feet in height; the interval between them is six feet ten inches. At the north end of the area the ruins of a building, which has been called the temple of Jupiter, 120 feet long and 43 feet wide; it had 19 columns, of which 15 are still standing, six columns are of the Corinthian order, and three feet eight inches in diameter. On the west side of the forum is the temple of Venus, which stood in an open area surrounded by a wall and portico. This temple was dedicated by a woman of the name of Eumachia, apparently as a place of assembly for men in business, and especially for the cloth merchants, who constituted a considerable body at Pompeii. It consisted of a wall and portico. Beyond it to the south, is the so-called double gallery, and having a portico in front. On the same side of the forum, but towards its northern end, is the Pantheon, so called from twelve pedestals placed in a circle near the south side of which are cells for the priests, and on the other side an adyta, the walls of which are covered with beautiful fresco paintings, the colours of which still retain all their vividness.

The other public buildings of Pompeii which have been excavated are the two theatres, the larger of which is capable of containing about 5000 persons; the temple of Hercules, which is the oldest building in the town, and the amphitheatre. The latter, which is at the eastern extremity of the town, separate from the other excavated parts of the town, is 430 feet long and 333 feet broad. It resembles in its structure the other buildings of the same class, which are described under AMPHITHEATRE.

For a description of these buildings the reader is referred to the work entitled 'Pompeii,' in the Library of Entertaining Knowledge, intended to supersede the typography of the Useful Knowledge Society, and to the elaborate works of Mazois, Sir William Gell, and Donaldson. The greater part of the private dwellings are small and mean, for the inhabitants lived mostly out of doors, and reserved all their magnificence for the public buildings. The numerous statues, medals, and other moveable antiquities found at Pompeii have been deposited in the Royal Museum of Naples, and are described in the work entitled 'Museo delle Antichita Pompeiane,' published at Naples.

POMPEIIUS, CNEIUS, commonly called Pompey, was born on the 30th of September, 106 B.C., in the consulship of C. Attilius Serranus and Q. Servilius Caepio, a few months after the death of M. Crassus. His family was plebeian, and one of his ancestors was said to have been a flute-player. His father, Pompeius Strabo, however, joined the aristocratic party, and fought under Marius and Sulla, the former being a man of extreme selfishness, he was in reality faithful to no party, and at last made himself so notorious for his avarice and cruelty, that, after he had been killed by a mob, his body was that of a rich man who had beenburied in his funeral to the body from the store and dragged it through the streets of Rome. (Plut., Pompei, i.; Vell. Pat., ii. 21.)

Respecting the early education of Pompey nothing is known, and the first time we find his name mentioned is in 79 B.C., in the consulship of M. Marius, when he went to fight against the Italians; he was also in the battle at the gates of Rome between his father and Cinna and Scipio. Soon after this battle, Cinna caused money to be distributed among the soldiers of Pompeius Strabo, and bribed a friend and companion of Pompey to murder him and his father; but the courage of the young man saved his own and his father's life, and put down an insurrection among the discontented soldiers. His father died soon after this event, and when the Marian party gained the upper hand, and made their entrance into the city, the house of Pompey was plundered. It was not until after the death of Marius, that Pompey was received in all the towns of Picenum, and Cisalpinia, and when in public, when his enemies immediately charged him with being the accomplice of his father in the plunder of Asculum. Having no confidence either in the justice of his accusers, or the character of the Roman Senate, he raised and led an army against them, and with C. Hirtius Cæpio, he secretly betrothed himself to the daughter of P. Antius, who was to preside at the trial, by which means, together with the protection of Carbo, he was acquitted.

When Sulla was returning from his expedition against Mithridates, Pompey, who had fled from the camp of Cinna just before he was murdered, was in Picenum, where he possessed very extensive estates and great influence. (Vell. Pat., ii. 29.) Here he was engaged in raising at his own expense an army, with which he hoped to overcome the Marian party before the arrival of Sulla, and thus to gain immortal fame. Without the authority or sanction of the Roman Senate, he raised and led an army, consisting chiefly of the veterans of his father. Three generals of the Marian party surrounded him in three different camps, and their impudent conduct enabled him to attain his object. But being directed by his horsemen, he was attacked by M. Brutus, and defeated his cavalry, which in its flight threw the infantry into disorder; the two other generals, discouraged by the failure of their colleague, retreated. Pompey was received in all the towns of Picenum, as their deliverer. (Plut., Pompei, 7.) The senate was indignant at his arbitrary proceedings, but his arm remained faithful to him. At the interview which he afterwards had with Sulla, for whose disposal he had determined, as soon as himself, he displayed enough of his vain and ambitious character for Sulla to discover that Pompey wished to be looked
upon as a man of no less importance than himself. When therefore Pompey, with apparent humility, saluted him as imperator, Sulla returned the compliment. Thus Pompey's wishes were gratified, and the impression made upon his soldiers, who now began to look up to him, was a young man of twenty-three years of age (Voll. Pat. ii. 29, 1), as their legitimate general, was highly favourable. But not being recognised by the senate, and not fighting under the auspices, he found nothing but the leader of an armed band of adventurers.

Sulla was made dictator, and the civil war was carried on in Italy with unremitting vigour. While the consul C. Cassius, who was besieged in Praeneste (82 b.c.), his colleague Cn. Carbo fought an indecisive battle against Sulla at Clusium, but his legates Marcus and Carrius were defeated by Pompey. Carbo then retreated to Ariminum, and sent Marcus to the relief of Praeneste, but Pompey repelled him in the Apennines with great loss. Carbo himself in despair sailed to Africa, but his troops, which remained in Etruria, were closely watched and afterwards dispersed by Pompey, whereby the fall of Praeneste was prepared. Sulla, partly to reward the young champion of his party, partly to make himself sure of his attachment, presented him with the hand of his step-daughter Aemilia, who was pregnant by Marcus Glaubrio, from whom she was delivered at Po. Pompey, who was married to Antistia, abandoned her, but Aemilia soon afterwards died in childbirth. Pompey was thus a declared champion of the party of Sulla, and after the war in Italy was brought to a conclusion, he undertook the administration of the affairs of Sicily, Africa, and Spain. Carbo attempted to escape to Egypt, but was overtaken and brought in chains before Pompey, at Lillybourn; his companions were put to death without even the form of trial. Pompey thereupon sent his friend to Pompey, was solemnly condemned to death, and Pompey sent his head to Sulla. All Sicily submitted to him without any further resistance. Much has been written about his moderation in this respect, but I am inclined to think that some of the persons whom it was unnecessary to destroy. Leaving the administration of Sicily in the hands of Memmius, his brother-in-law, he set out for Africa with an immense army, and defeated the Aemilii, under whom some remnants of the Marian party had assembled, and also to support Hiempsal, a friend of Sulla, against Hiarbas, king of Numidia. A battle ensued, in which Pompey, though with great loss, gained the victory. Domitius Ahenobarbus was put to death, and Hiempsal restored to his throne. The whole object of this campaign was attained in the course of a few months, and Pompey gained general admission for his disinterestedness. He returned to Rome, where he found all diverted to another aim at the time of his return. Sulla himself complimented him with the appellation of Magnus (the great), which henceforth became hereditary in his family. The time at which this supplement was conferred by Pompey on the examination of the various accounts in Drumm's 'Hist. of Rome' (vol. iv. p. 335, &c.), it cannot be doubted that he obtained it after his African expedition. But the vanity of Pompey was not satisfied with these distinctions, and although he had not yet held any public office, and was only a knight (eques), he was bent upon entering Rome in triumph. Several discourses took place in the senate, where great efforts were made to prevent such an unprecedented occurrence, and when at length Pompey had recourse to threats, saying that the people would prefer the rising to the setting sun, Sulla, indignant at his arrogance, entered the forum, but Pompey and his triumvirate. Pompey thus entered Rome in triumph. After this display of childish vanity, Sulla treated him with a coldness which did not fall short of contempt. (Plut. Pomp., 15.)

This feature of vanity in his character explains the otherwise great expectations that, in the absence of Sulla, he exerted all his influence to secure the consulsiphip for Aemilius Lepidus. Sulla, foreseeing the consequences, said to Pompey, on this occasion, 'Thou hast given the sword into the hands of the people. Let them see whether they will give thee the crown. For a month Lepidus openly made the impotent attempt to rescind all the laws of the late dictator, in which he hoped to be supported by Pompey; but Pompey, remaining faithful to his own interest, and with great precautions taken by the senate that peace and order were maintained during the consulsiphip of Lepidus and Q. Catulus; but after the expiration of the year, when Lepidus had gone to his province of Gaul, the war broke out. Lepidus was defeated by the united forces of his late colleague Sulla, and his friends Pompey, and was at length prevailed upon by the senate to take the field against M. Junius Brutus, the father of the celebrated Brutus, who was still at the head of a division of the army of Lepidus in Cappadocia Gaul. Brutus defended himself bravely in Mutina, until at length, however, his resolution failing, he apprehended the danger of his situation. He then resolutely compelled him to surrender; he obtained the promise of safe passage, but was put to death the next day by Geminus, at the command of Pompey. (Plut. Pomp., 16, 64; Appian, 1. 35.) Scipio Aemilianus, the son of Lepidus, was made prisoner in Liguria, and likewise put to death at the command of Pompey. Lepidus was at length attacked by Catulus and Pompey, in the neighbourhood of Cosa, and being again defeated, managed to make his escape. Pompey sent after him, and, seeking refuge in Sardinia, he was expelled from the island by the Roman governor, and soon after died. The surviving followers were treated with great clemency, partly that they might not be induced to join the army of Sertorius in Spain, and partly because the victorious party themselves wished for peace in order to enjoy the fruits of their victory. Pompey also received orders to lay down his arms and return to Rome. He disobeyed the command, and with the utmost celerity and anxiety to obtain the command against Sertorius. And when indeed the power of Sertorius assumed a more threatening character, when Perpenna had joined his army, the senate had not the man to oppose him. The command against so formidable an enemy, it was at length reluctantly decreed that Pompey should be sent to Spain with the power of a proconsul, and in 40 days he was ready for departure, with an army of 30,000 foot and 15,000 horse. He had been in office about three years of age. He crossed the Alps, according to Appian (Civil., i. 109), between the rivers Rhone and Po, and directed his course towards the southern coast of Spain, where he landed near Cosa, and, finding the city strongly supported by the consul Lucullus, who feared lest Pompey might return, as he had threatened to do, and obtain the command against Mithridates. Pompey advanced upon his camps, the three consuls, and the authors, but at last assassinated by conspirators headed by Perpenna (74 b.c.), he would probably have driven the Romans from Spain, although Pompey conducted the war with great skill. He now also received reinforcements from Italy, which he spared to the enemy, that he might have at his disposal all the forces which were strongly supported by the consul Lucullus, who feared lest Pompey might return, as he had threatened to do, and obtain the command against Mithridates. Pompey advanced into Spain, and, after the death of Sertorius, Perpenna was at the head of his armies; but as he had never distinguished himself as a general, he secured no confidence. He was undecided whether he should offer battle to Pompey; until he was emboldened by the appearance of a small division of the enemy's army, but he soon found himself attacked by the whole hostile forces, and took to flight. He was found in a small town, and, in order to save his life, offered to deliver up to Pompey letters of Roman nobles, in which they had invited Sertorius to Italy, and expressed their aversion to the constitution of Sulla. Pompey refused to see him, and ordered him to be put to death, and the papers to be burned without being read. The army of Perpenna dispersed; but those who could not expect a pardon sought refuge in those towns which were determined to defend their liberty to the last. Some of these towns were razed to the ground by Pompey's soldiers, and those who had supported the enemy of their own country, were individually rewarded with the Roman franchise. (Cic. Pro C. Balbo, 6.) As Metellus left Spain before Pompey, the enemy were still at large after the battle of Po. It appears that he alone had accomplished the pacification of Spain, and, with the assistance of commissioners sent by the senate, he proceeded to organise the administration of the province of Spain. The appending account of the troubles which undertook him, his increasing his vanity and the admiration of the multitude, who took him for what he
wished to appear, and longed to see him return to Italy, where another great object was to be accomplished. Almost the whole of southern Italy was in the hands of the revolted slaves under Spartacus. On his return, Pompey entered in triumph at Rome, and a remarkable inscription recording his victories. (Strabo, iii, p. 257, and iv, 5, p. 287, Tauchnitz.) On his return through Gaul he settled some of the bands which had served under Sertorius in Gallic provinces, for almost the whole of the province of Lugdunum Conversum (St. Bertrand). (Hieronym., Adv. Vigilant, tom. iv, p. 282, ed. Monach. Benedict, Paris.)

Pompey had at length been constantly engaged at the head of his armies, and was totally unacquainted with the internal administration of the republic. The aristocratic party felt little gratitude for his services; for each individual among them was jealous of him, while as a body they feared him: the people, on the other hand, had long forgotten that he was the head of the party of Sulla, and saw in him only their deliverer from an enemy who had threatened to invade Italy with hosts of barbarians. On his arrival in Italy, he did not, as the laws required, dismiss his troops, for he knew that with them he might obtain anything from the senate. Crassus, a friend of the aristocratic party, had been conducting the war against the slaves; and on hearing of the return of Pompey, he had hastened to Rome to snatch the laurels from him. The war was indeed at an end on the return of Pompey, but he found an opportunity of cutting to pieces a body of 3000 slaves, who were on their march for Rome, which he fulfilled. The Senate resolved to send Pompey to the province, and the Senate and the Senate and the Senate, which Crassus had indeed gained the victory, but that he had rooted out the war. Crassus felt this arrogance the more keenly, as he wished to obtain the consulship with Pompey, and was obliged to make use of the influence which Pompey had gained at his cost. Pompey, though absent from Rome, was a candidate for the consulship, and was prudent enough to recommend Crassus as his colleague. As Pompey had not yet held any of the minor civil offices, he could not legally be a candidate for the consulship. But the Senate, not wishing to have the two most powerful men in the state their enemies, was obliged to suspend the laws in favour of Pompey, and he and Crassus were elected consuls for the year 79 B.C.

Pompey had now little difficulty in obtaining a second triumph, especially as he had become a great favourite with the people, and had declared that he would restore the tribunician power, which was abolished by Sulla, and would do so he could to stop the abuse which the aristocratic party made of their judicial power. The two consuls elected Metellus stood with their armies before Rome, and on the 31st of September, 71 B.C., Crassus entered the city in an ostentatious manner. The people of Rome now did their utmost to gain the favour of the people, and Pompey began to fulfil his promises. The question concerning the restoration of the tribunician power had been again brought to the Senate, and those two persons who were now in a state of great excitement, for the abuse of their power by the senatorial party had become intolerable. When Pompey brought his resolution before the senate, the opposition was not so strong as might have been expected. Supported by his troops, which were still in the neighbourhood of Rome, by Crassus, and the exasperation of the people, Pompey carried his bill. Much may be said both for and against this restoration of the tribuneship; thus much however is certain, that the event was more important than real. Pompey had thus gradually changed his original position, and from a champion of the senatorial party, he had become a man of the people, and found himself at once by the side of Caesar, who was already beginning to exercise an influence over him. This measure, which, at the time gained him general popularity, was soon followed by another proposed by the tribune Aurelius Cotta, which deprived the senators of their exclusive position in the administration of the public business. The measure was not equally amongst the senators, the knights, and the people, the last being represented by the tribuni Aerarii. This measure was productive of little improvement, for moral corruption was not peculiar to any one class, but pervaded the whole body of the people.

After the expiration of his consulship Pompey refused to go into a province, but he dismissed his army, and remained at Rome for two years without holding any office. During this time he seldom appeared in public, and never without a numerous train, which was well calculated to impress the people with his importance. He forecasted that the time was not far distant when his invincible arm would again be required to save Rome from destruction. The Mediterranean was almost covered with pirates, who had landed on all parts of the coast, and even in the immediate neighbourhood of Rome. The high-roads of Italy were not safe. Rome itself was suffering from scarcity of provisions, and was rendered fearfully by the piratical incursions which were intercepted by the pirates. The tribune A. Gabinius, a man whose fortune was completely ruined, brought forward a resolution that a consular man should be invested with unlimited powers for the years over the whole Mediterranean and its coasts to a distance of fifty miles, and that all the resources of the state should be at his disposal. No individual was mentioned, but the eyes of the people were directed to Pompey as the only man capable of saving the republic. He himself kept in the background: in the senate the rogetion met with a fierce opposition, but Caesar supported it, and thereby alienated Pompey still more from his former party. When the day came for the measure to be decided by the voices of the people, Pompey was in the market-place entreating the people not to draw him again into the field of action, and to appoint a more deserving general. This piece of hypocrisy had the desired effect, and the rogetion was carried on the second day, notwithstanding that the voices of the people were completely against it. The tribune Gabinius at once murdered himself. Pompey was again elected consul for the year 77 B.C., and the tribune Gabinius for the year 76 B.C., he opened his operations in the Mediterranean. His legates were stationed in various quarters of the sea to draw forth the pirates and to prevent them from uniting their forces to himself with the main armaments the sea, and drove the pirates eastward. Within forty days the sea between Africa, Spain, and Italy was cleared, and Rome was again the safe haven for the people of Athens, where he was received with divine honours, and after a short stay he proceeded on his expedition. The pirates who had not yet surrendered were at last surrounded and blockaded near the coast of Cilicia. Here the first and decisive battle was fought at Coracesium. The pirates were defeated, and took refuge in the town, which they surrendered after some resistance, together with all their ships and arms. Numbers of the pirates had deserted previous to the decisive battle, and the humanity with which they had been treated by Pompey constituted a little to induce the rest to surrender. All the towns and former strongholds of the pirates opened their gates to Pompey; and from that day their strength was merged in that of Rome, and they were disarmed and purchased back from their enemies. The inhabitants of Cilicia, they were allowed to resume their former mode of life. The whole war did not last above three months. One hundred and twenty towns and castles were occupied by the Romans, and partly destroyed; 1300 ships were burned, 72 were taken, and 306 others surrendered.

In the meantime some of his enemies at Rome began again to try their strength, but Pompey, at the head of his immense forces, and with dictatorial power over a great number of the people, was able to carry his consuls into effect. He continued to remain in Asia, for his object now was to be invested with the command against Mithridates. The war against this king had long been carried on with varying success, but no decisive advantage had yet been gained. The people at Rome had now the most unbounded confidence in Pompey, and when C. Manilius produced a bill (Cicero, Pro Lege Manilia) for giving to Pompey the conduct of the war in Asia, a bill which united all the Romans and the army in the East, and with the rights of a proconsul in all parts of Asia, it was carried notwithstanding the opposition of Catulus and Hortensius. The intelligence of this decree was received by Pompey in his usual manner, with apparent firmness, but in the future it was to show how calm he would allow him no peace, and would expose him to the greatest dangers in order to get rid of him. (Dion Cass., xxxvi. 28; Plut., Pompe., 30.) Notwithstanding this, he immediately set out (66 B.C.) to take the place of Lucullus,
but the fact admitted by the antient writers themselves, that the power of Mithridates was broken before Pompey undertook the command, it is nevertheless certain that he acted with great energy and prudence, so that the expectation, which Rome had entertained of him, was at least in part satisfied. He took his fleet round the coast from Syria to the Thracian Bosporus (Plut., Pomp., 31, 32), and hastened from Crete to Gallatia, where he assembled his land-troops. Proposals which he made to the Thracians for a junction with Pompey were rejected. Pharnaces, king of Parthia, was determined to make an attack on Armenia, and thereby made him his friend and ally. Mithridates, seeing himself thus deprived of his hope of receiving succours from Parthia (Appian, Mithrid., 87; Dion Cass., xxvii, p. 242), sued for terms. Pompey offered him the safe-conduct of the submission of some Arabian chiefs, he hastened through Syria and Cilicia back to Pontus. Immense treasures were here surrendered to him; and Pharnaces, son of Mithridates, together with his army, joined Pompey; but he refused to see it, and ordered it to be buried with royal honours at Sinope. Pompey now gave to Pharnaces the kingdom of Bosporus; Deiotarus, tetrarch of Galatia, was rewarded with Lesser Armenia; Bithynia, Paphlogonia, and Pontus were restored to their old possession; and Pompey took possession of Cilicia and Pamphylia under the name of Cilicia and Syria. Aristocharanes received Cappadocia, and Tigranes was allowed to remain king of Great Armenia. After he had thus settled the affairs of Asia, Pompey prepared to return to Rome, where the anticipation of his arrival called forth the activity of the several parties; some dreading his arrival with a victorious and devoted army; others, particularly the enemies of Cicero, wishing for his presence, that, as they said, he might restore the constitution, which had been violated by Cicero in his proceedings against the Catilinarian conspiracy. (Plut., Cic., 23; Cat. Min., 26; Suet., Cæs., 16.) In January of the year 61 B.C., Pompey landed at Cosa, and undertook to prosecute without a longer delay the march of the Roman armies against Mithridates. He continued his journey towards Rome until party rage had subsided. He was everywhere received with enthusiasm, and the greater part of the population of Rome left the city to welcome the Triumvir to its streets. It was ordered by the Senate that the collegium of magistrates should choose a day for his arrival, and that the emperor himself should then enter the city and take the field at his own pleasure. After an interval of some months, he celebrated his triumph over the pirates and Mithridates, the most magnificent that Rome had ever beheld. Large tables were carried before him, containing an account of the countries and princes that he had subdued; and of the ships, treasures, and prisoners he had gained for the republic an immense train of wagons followed, loaded with the spoils of the East. On the second day the emperor himself entered the city, and before his chariot moved the victorious general who differentiated his prisoners, 324 in number, and behind him followed his legates and military tribunes. His army took no part in the triumph. (Appian; Dion Cass., xxvii, 24.) After the triumph was over, Pompey dismissed his prisoners to their native countries, with the exception of young Tigranes and Aristobulus; and with his spoils he built a temple to Minerva, with inscriptions to commemorate the victory.

After his triumph, he naturally expected that all his measures in Asia and the distribution of lands which he had promised to his soldiers would be sanctioned by the Senate. But the Senate was so corruption-sealed as to refuse the support of L. Afranius, to whom he had promised the consulship. But he found himself not only opposed by Cato and the heads of the senatorial party, but abandoned by the cowardly Afranius. This blow was too severe for a man like Pompey to bear, and he not only joined the popular party, a step which he could not safely retract, and which involved him in those difficulties in which he at last perished. Caesar, who was sure that he could not be outstripped in the distribution of the people, supported Pompey, and thus at once weakened the power of the aristocracy, and gained over Pompey to his own interests. Crassus, the wealthiest of the Romans and the friend of Pompey, was not easily gained either; but the men now formed what is generally called the first triumvirate.

During his consulship, Caesar (59 B.C.), by his Agrarian law, enabled Pompey to fulfill the promises which he had made to his veterans: large districts of public land in Campania were assigned to them. Caesared for him the sanction of the arrangements he had made in Asia before he left it. Pompey in his turn was obliged to support Caesar, his apparent friend, in all his designs, and thus his reputation was sullied by the necessity of his acting against the aristocratic party; while on the other hand he was neither himself sincerely devoted to the people, nor regarded by them with any other feeling than astonishment for his military achievements. (Dion Cass., l. 129.) The mother of his two sons, Caesar, to secure him still further to have given his daughter Julia in marriage, with whom Pompey spent most of his time during this period in his villa of
Albanum near Rome, unconcerned about the sufferings of his great eulogist Cicero, who was driven into exile by the triumvirate. Pompey, who had mad an attempt to assassinate Pompey that he promoted the recall of Cicero. Gratuity induced Cicero to endeavour to reestablish Pompey in the popular favour, by procuring for him the praetorship for five years, and the consular powers for five years. He conceived an affection for the young man of 56 B.C., Pompey returned to Rome, where he exerted his influence for the restoration of Popleanus Auletes, king of Egypt, who had been expelled from the country by Publius Cæsar, who had taken upon himself the command of the two consuls, and against whom Pompey had accused Milo; and when Pompey defended him, he was loaded with abuse by Cicatus. This affair also involved him in a contest with the tribune Cato, who attacked him in the senate, and accused him of ruthlessness to Cicero. The silence of the audiences inflamed Pompey's anger, and he openly spoke of secret conspiracies against himself, pointing out his colleague Crassus as their author. He was now conscious of having lost the favour of all parties, and saw nothing but ruin before him. He fled from Rome as a defeated man, who had taken upon himself the winter-quarters at Luca, and to whom Crassus had already gone. Caesar reconciled the two men, and, about the middle of April, 56 B.C., concluded a secret treaty with them, according to which Pompey was to remain consul for five years, and Pompey and Crassus were to be made consuls for the following year, with the provinces of Spain and Africa for Pompey, and Syria for Crassus. He moreover promised to exert all his influence with the people in their favour.

Pompey now returned to Rome with renewed courage and arrogance, and with Crassus a candidate for the consulship. The opposition, headed by the inflexible Cato, who saw through the policy of his rival, was found to be useles; but when the day of election came, it was only after the forum had been occupied by armed forces that Pompey and Crassus attained their object. The triumvirate of Crassus and Pompey had succeeded in obtaining the office of consul, by which they had already determined. Pompey, now again at the head of the Roman world, indulged in vain dreams of a final victory over his rivals, not possessing penetration enough to see that he was preparing his own ruin, and that Caesar was only using him as an instrument for the accomplishment of his own objects. Pompey built a magnificent theatre, and amused the multitude for several days with the most gorgeous spectacles. But he was soon checked in his plans by the knowledge that he was at last ready to take arms, and that he had left his antagonist and the Romans behind. Pompey, while he was raising troops in Italy and in Gaul, and sent them to Spain under his legates Afranius and Petreius, the people loudly expressed their discontent. At the same time, he received the news that Pompey had governed his province by his legates, and remained with his army in the neighbourhood of Rome, ostensibly to provide the city with provisions, but the fact was that he thus hoped to obtain dictatorial power, and to disarm Caesar through the senate and the people without striking a blow. He interfered with the administration of justice, prevented the election of new consuls, and secretly kept up hostilities between the parties at Rome. In September of the year 54 B.C., his wife Julia died, and when proposals were made for a new alliance with the family of Caesar, he rejected them. Crassus in the meanwhile perished in Asia, and the triumvirate was changed into a duumvirate. Pompey had long been in communication with Marcus Cæsar, and it is probable that Pompey conceived fresh hopes. In the ensuing quarrel between Milo and Cicatus (Cicatrosator), the senate, unable to maintain peace and order in the city, empowered Pompey to collect troops, and to put an end to the disturbances. Pompey was now again in his proper sphere: his first object was, with the assistance of Crassus, to procure the recall of Caesar, and to get rid of him not only introduced new forms of procedure, but also surrounded the court with soldiers during the trial of Milo. Milo was exiled, while others who were equally guilty were acquitted, as Pompey had no ground for censuring the votes of the people. In the month of July, Pompey was made sole consul, but on the last day of the consulship he made Metellus Scipio, whose daughter Cornelia he had married, his colleague, and with him he held the comitia to elect new consuls for the year following. At the same time an old law, that a candidate must have been a citizen of Rome, if he wished to be a candidate for the consulship. For himself Pompey obtained a prolongation of his consulship over Spain for five years. While Pompey, declining those offices at which he might become involved in the perils of the war, Caesar, on the contrary, undertook to extend the work of recovery, was more and more confirmed in his conviction that he was the first man of the republic, Caesar had by the distribution of large sums of money increased his party at Rome, and gained over to his interest several tribunes, among whom was the bold and eloquent Curio, Caesar, though absent from Rome, claimed to be elected consul for the following year; and when Pompey and the senate required him to dismiss his army and present himself at Rome as a candidate, Curio declared that Pompey should likewise dismiss his army. [Caesar.] After long discussions, the party of Pompey gained the day, and a decree was made declaring Caesar a public enemy unless he resigned his commands. On this occasion Cicero exclaimed: 'Pompey, thou hast betrayed us!' Cato however thought it advisable to declare Pompey general of the republic. Pompey with his few troops could do nothing; he left the business of the state to his accomplices, and Caesar, Crassus, Cicero, and others of the aristocratic party; they hastened to Capua, and thence to Brundusium. The consternation among those who were obliged to remain in the city was indescribable; they dreaded a renewal of the secessions that they had witnessed under Marius and Sulla. But Caesar by his moderation won the hearts of all. From Brundusium Pompey fled to Dyrarachium in Epirus, which he strongly garrisoned and fortified, while Caesar established his capital near Actium, on the other side of the Straits. It was easy to go to sea; but if they went to sea, they would be exposed to him than any other they could have chosen, for the fleet was at his command, and he could raise new troops without great difficulties; but he had to struggle with the Romans and the Gauls, the Spanish people, and the Egyptians, and to fight the battle to Caesar, and others for not accepting the proposals of peace which Caesar repeatedly made him. His own plan was to weaken his enemy without fighting a battle. But Caesar received reinforcements from Italy, and Pompey was cut off from Dyrarachium; in a battle which ensued, Caesar was defeated, and directed his march into Thessaly. After this success, the senatorial party imagined that all the work was done, and that they might without any danger return to Italy; and when Pompey declared that Greece must first be cleared of the enemy, they urged him the immediate necessity of battle. Caesar knowing this disposition of his adversaries, compelled them, on the 9th of August, 48 B.C., to give battle in the plains of Pharsalia. The battle was lost; and though he had still considerable forces at his command, he was disheartened. He fled to the mouth of the river Peneus, and thence sailed to Lesbos, where, as usual, he had sent his slaves and other persons of value with him. Upon advice of one of his friends he determined to seek refuge in Egypt, whose king was indebted to him for the restoration of his father. He landed there on the 30th of September, but was treacherously murdered in the presence of the king and his army by the tribune Septimius, at the instigation of Achillas and Theodotus, who feared the anger of Caesar. The wife and child of Pompey, who were still on board the ship, and saw the murder, fastened away. The murderers were hanged, and the head put upon the bow of the ship where it was buried by a Freeman and a veteran. Caesar, who arrived in Egypt three days later, shed tears at the Vol. XVIII—9 D
sight of the head of Pompey, and put his murderers to death.

Pompey was 58 years old at the time of his death. It is difficult to form a correct judgment of his character, for he was not, like Marius, Sulla, and Caesar, a man of singlemindedness, but he changed his position according to the circumstances in which he was placed, and which he was unable to control. Though by birth not belonging to the senatorial party, he was by his immense fortune placed on a level with them, and made himself their champion, though they could never sympathize with him; for the people, he had no heart, and when he joined the popular party, it was solely to satisfy his own ambitious views. He was thus in reality throughout his life floating between two parties, and was neither in his private nor public life faithful to either. The latter was the more to be admired, as he looked upon as the first man of the state, and he objected to no means of accomplishing this end, even though they tended to subvert the constitution. In his civil administration of the state, and during the whole period from his great triumph to the war with Caesar, the little that he did was not calculated materially to improve the condition of his country. Ambition and vanity were the leading features of his character, and a calculating selfishness pervaded everything that he did. After he had rested on his conduct as a general, though he was inferior in this respect to most of the great generals of his age. In his private life he formed indeed a contrast with most of his contemporaries, for though immensely rich, he lived simply, abstained from all debauchery and excesses, and was faithful in his matrimonial relations. It is also generally acknowledged that he did not enrich himself by extortion in his provinces, though no man had ever had more opportunities, and that he was conscious of the bad application of the public money. As regards his intellectual powers, he was not above mediocrity, although sometimes he attempted to be the patron of science and literature. Cicero judged of him differently at different times, according to as he was governed by momentary impulse or by what he considered the good of the state. His features in his statues and busts are, according to Niebuhr, expressive of a high degree of vulgarity and rudeness: others think them majestic and imposing.

(See the articles CicERO, CAESAR, SEXTUS, MITHRIDATES, and especially Pompey's Life in DrumMANN's Geschichte Röm, 4th v. 324-56.)

ROMPEUS, CNEUS MAGNUS, the elder of the two sons of the triumvir Pompey and of Mucia. He was born about 77 B.C. According to Appian, he and his brother Sextus were the only two left of their father on his expedition against the pirates. When the war with Caesar broke out, he was sent to Egypt to collect troops, and when he returned to his father's fleet in the Adriatic with 500 horsemen and 50 ships, and found that Caesar had been allowed to cross the Adriatic, he felt very indignant and opposed several of the hostile ships. After the defeat of his father, he sent his squadron back to Alexandria and remained with the main armament near Corcyra, justly observing with Pompey such a fleet was not likely to be a measure of disaster. In the spring of 47 B.C., when sailing with the fleet to Africa, he was informed by his brother of the murder of his father. The aristocratic party, whose interests were now distinct from those of the family of Pompey, did not allow young Cneus Pompey to be among them in Africa, and sent him to Spain, where he might prepare for them a refuge if they should be unsuccessful in their contest. Cneius, after having taken possession of several small islands, landed, about 46 B.C., with 1200 horsemen, and was joined by his brother Sextus, who had left Africa after the defeat of the senatorial party at Thapsus. Cneius soon collected an army of 13 legions, but Caesar did not at first think him an adversary of any consequence, and sent only his brother C. to oppose him. It was only after he had discovered that the enemy was not only stronger, but much more resolute than he supposed, that he decided to follow him, and did not immediately pursue him after he had found it necessary to follow himself. On the 17th of March, 45 B.C., Cneius was defeated in the bloody battle of Munda (Munda in Orinada), and flying to Carthage, attempted to escape across the sea. Being thwarted in this, he directed his steps towards the interior of Spain. His enemies followed, and overtook him in the neighborhood of Lauron, where he was killed. Being naturally of a passionate and overactive disposition, he was inflamed with an insatiable desire of revenge, and changed his strong boldness into a kind of savage asceticity. See the article CAESAR, and the detailed account of the war in Spain in the book DE RE Militari.
A rupture between Pompey and Octavian ensued, and Menodorus, the admiral of the former, went over to Octavian, and treacherously surrendered to him Sardinia and Corsica. Octavian was now bent upon destroying the Pompeian fleet, but his fleet was defeated by the wind of Pomptine, first near Cumna and then near Messina. Pompey however, as usual, did not avail himself of his victories, and allowed Octavian to repair his losses. The faithless Menodorus again returned with twenty ships of his mother nation. M. Vipsanius Agrippa was appointed by Octavian as chief admiral of his fleet, and a landing was to be made on three parts of the island of Sicily at once; but the fleet was dispersed by a storm, and Lepidus alone reached Lilybaeum. Octavian followed him with the remainder of his fleet, and Pompey sacrificed to Neptune, whose son he called himself. (Dion Cass., lxxvi. 19; Horat. Epod., 9.) Menodorus again deserted Pompey, and in a sea-fight off Mylas against Aetius, Pompey, on a 300-foottcher, Octavian from landing at Tauroctenum. After several skirmishes, Agrippa at length (36 n.c.) in a great sea-fight near Naucodichus decided the fate of Pompey, who, when he heard of the destruction of his land troops, fled with his daughter and 17 ships from Messina to Asia. He was not followed by Octavian, and found an hospitable reception with C. Furnius, the legate of Antony. But he soon lost the confidence of his host by sending secret envoys to the emperor. The defection of Lepidus and the open war broke out between him and Furnius, and when Antony, who was at the time in Alexandria, heard of it, he sent Titius with a fleet of 120 ships against the dangerous garments of his treachery. But Pompey, having despaired of his enemies and deserted by his troops, he surrendered, and was put to death at Miletus (35 n.c.), either at the command of Antony himself or of Titius, who wished to remove a man who might easily be the cause of a rupture between the triumvirs.

Sextus Pompey was 40 years old at the time of his death. He had been deprived of all that was dear to him, and was drawn into a war which he would willingly have avoided, if he had been able to resign to his country and could have recovered his property without it. In his undertakings he avoided almost all his success to favourable circumstances and to the great reputation of his name, for he himself was neither active nor prudent. (Val. Pap., ii. 73, 79; Cic. Ad Att. vi. 4.) He assumed the name of Pius, because he endeavoured to avenge the death of his father and his brother: this surname appears on many of his coins. [Pompeius, Ceritius.]

POMPEIUS, TROGUS. [Trogus.]

POMPELIUS, according to Latturellus, a genus of Hymenopterous insects of the section Fossariae and family Sphingidae. In the systems of Dr. Leach, Mr. Shuckard, and some others, the Lepidoptera are divided into a family of Lepidoplius, the principal characters of which are as follows:—posterior legs at least as long as the head and thorax taken together; antennae of the female formed of long joints, generally distinct and often curved; proboscis at least as long as the body; its posterior larva, which is more pointed at the posterior end; abdomen obovoid, without any long petiole at the base. The Pommilus are extremely active: they run and fly with great rapidity, are for the most part of moderate size, and often adorned with red and black colours; at least those species which belong to the genus Pommilus.

These insects burrow in the ground, preferring sandy situations, and store their cells with spiders, which constitute the food of the larvae. (Syst. Nat., i. 126.)

In the genus Pommilus, the superior wings have one marginal cell, which is semicircular, and sometimes nearly triangular; and three submarginal cells; the first of these is as long or longer than the two following cells; the second receives the first recurrent nerve about its centre; and the third, which is either triangular or subquadrate, receives the second recurrent nerve. A fourth submarginal cell is sometimes traceable.

There are numerous species. Mr. Shuckard, in his work on the indigenous Fossilous Hymenoptera, describes eighteen species. Besides Pommilus proper, the genera Ceropodes and Aruinae are included under the same family, and these and a few of the English species they contain will be found in Mr. Shuckard's work.

POMPION. [Pomponi.] POMPONIUS SEXTUS, a distinguished Roman jurist. His age may be approximated to from several circumstances. He is supposed to be the Sextus mentioned by Gaius in connection with Julianus (xii. 218). In the extract from the 'Libri Singularii' of the 'Encheiridion' of Pompeius Agrippa (Dig., i. 9), the son of Atticus' is the son of that Atticus to which Cicero refers, and Pompey the elder, and was a child when Pompey was defeated at the battle of Pydna. He had not a very active career of life. (Dig., xxii, tit. 1, s. 32.) Sextus Pompeius is cited by Pompeius (Dig., xxviii, tit. 5, s. 41.) On the whole it seems likely that Pompeius was the Pompeius who was last called Pompey, and who was sometimes simply called Sextus. But if there were two, it is difficult to say when they respectively lived or what they respectively wrote. Pompeius survived the emperor Antoninus Pius. (Dig., i. 12, s. 14.) In one passage he calls Gaius (Dig., xiv, tit. 3, s. 39) 'Gaius noster.' From all these circumstances it may be concluded that a Pompeius lived under Antoninus Pius and survived him. If there was a Sextus Pompeus, he was older than Pompeius.

The works of Pompeius, as cited in the Florentine Index, are thirty books 'Ad Q. Mucium Lecitonum,' thirty-five to Sabinus, twenty books of Epistles, fifteen books of Varius Lectiones, seven books to Flavius, five books to P. Servilius, five books to Regulus, and two books of the Encheiridion.

The 'Encheiridion,' as extracted in the 'Digest,' is called 'Libri Singularii.' It contains an historical sketch of the wars of Pompeius, and is addressed to the emperor. The writer implies that the emperor could also read the works of Pompeius (Dig., i. 9, s. 39) 'Sextus Pompeius Mela.' [Mela.]

POMPITINE OR PONTINE MARSHES (Paludi Pontine, in Italian) is the name of a low marshy plain in the Papal State, which flows into the sea near Rome, east from For. Appio to Terracina, and varying from eight to ten miles in breadth. It is bounded on the east by the Monti Lepini. On the west it is bounded by a range of downy from 30 to 60 feet high, which begin on the south at Mount Circeo, an insulad calcarious mountain 1600 feet high, which juts out into the sea, and thence run to the northwards parallel to and at the distance of from two to three miles from the coast, leaving a belt of land between them and the sea. On this belt is peculiarly fertile and part occupied by lagoons. This belt has no water communication with the basin of the Pomptine marshes. From Mount Circeo eastward to Termeine, another ridge of downy from 15 to 20 feet, which is drained by a river which is called Portatore di Badino, which is the great outlet of the waters of the Pomptine marshes. On the north and north-west the Pomptine basins border on the flat plain of the Lepini, from whence the general slope of the surface is towards the south-east, in the direction of the length of the marshy plain, on one side of which the ground rises gently towards the Lepini ridge, and on the other towards the terrace or downs above mentioned. The greatest depression is towards the south-east extremity, where an extent of about three or four square miles is below the level of the sea. All the rest of the surface of the plain is above the sea-level, being much divided by small ridges. In the north-west of the Plain of the marshes, and declining gradually along the centre of the plain, until it is only five feet at the point where the waters flow into the canal or estuary of Badino. The rivers which flow into this basin begin from the north,—1, La Tepia, a muddy stream which rises in the heights of Giuliano and Core, east of Velletri; 2, the Nina, which has its source at the foot of the mountains on which Norcia is built; 3, the Curato, which issues out of a small lake near Sant’Angelo; 4, the Vicosso, a small stream which rises at the foot of the Monti Lepini, near Casenova, not far from Sessa; 5, the Amazeno, which rises in a deep valley of the Monti Lepini, called Valicecors, and drains a considerable tract of country, and enters the Pomptine plain by a narrow defile below Piperone; 6, the Podicata, a smaller stream which rises in the mountains of Somnino. The French engineer Prony demonstrates in his able work 'Description Hydrographique et Hydrologique de l'Isle de la Houle' 3 D 2
des Marais Pontins, 4to, with an Atlas, Paris, 1829), that one-half of the water which flows into the plain of the Pomptine marshes is derived from subterraneous drainings of the more elevated neighbouring basins of the Succo, the river Epte, and the marshes to the line of the morass which should be restored at the same time. In 1778 the works began. Rapini began by clearing the canal of Badino as far as where it meets the Via Appia, and he then proceeded to number of the Via Appia, with its arches and bridges, emerge from the stagnant lagoon in which it had been buried for ages. From seven to eight thousand workmen were employed for more than three years, and at last, in 1781, the excavation of the canal was carried as far as Forutola, at the extremity of the marshy region. The canal, thus opened in a straight line of about 14 miles long, was appropriately named ‘Linea Pia’. It is from 40 to 50 feet wide and 9 feet deep, and is embanked throughout by earth and stone. Rapini afterwards cleared the lateral or western canal, called Fiume Sisto, and introduced into it the waters of the Ninfa and of the Tepia from the upper part of the marshes. This important canal, which describes a curve of nearly 30 miles in the marshy region, the Portatore, was embanked between 29 to 30 feet wide.

In the eastern part of the marshes a new bed was dug and embanked for the river Ufente, and was made to join the Amazeno at Ponte Maggiore, after which the united stream flowed between the notched banks of the Botte, were excavated parallel to the main canal, with cross cuts at the distance of one mile each, which open into the Lina Pia so as to drain the intermediate space.

Lastly, a branch of the Portatore, or great ossuary, was made to run into the port of Terracina in the shape of an embanked and navigable canal. All these works, which lasted about fifteen or sixteen years, cost Pius VI. only nine millions of francs, or 350,000l. sterling. Rapini having the contract also built the works of the Portatore, and fortunately the state of the papal treasury and the confusion resulting from the French revolutionary invasion prevented their completion. Some years after, when Napoleon took possession of the Papal State, a commission was appointed to superintend the hydraulic works of the Pomptine marshes, and 200,000 francs were granted annually for the purpose of draining them. A fresh embankment of the Amazeno, a rapid current, was effected, and the intermediate canal of Schiazza was lengthened in order to drain more effectually the space between the central line and the Monti Lepini. With regard to the western portion of the marshes, several engineers advised that advantage should be taken of the plan of the town of Narni, which belonged to the Romans, but which probably dates from the Roman times. This canal is cut across the western downs, and affords a direct communication between the middle part of the Pomptine marshes and the Lagoon Sermoneta. As the plan was found to be much too large, the town of Narni was destroyed, and 100 feet wide, and about 40 feet deep. By clearing and continuing this excavation to the sea, it was proposed to make it the common eminence of the Tepia and other streams which flow through the upper or north-west part of the marshes, and which are now cut to number the canal called Fiume Sisto with their deposits. But Prony objected to this plan, because he thought it necessary to diminish the current of water which runs out through the sea in winter. It was this which prevented the whole of the river from becoming a most delightful region. But, except the post stations along the high road, and some scattered huts here and there, there is no permanent population throughout the whole of the Pomptine marshes. The distance between 70 and 80 feet wide; there is about 4 feet water over the bar, and nearly 10 feet water inside of it, where boats find a safe anchorage.

Further details concerning this interesting country area...

PONCE DE LEON, RODRIGO, born in 1443, was an illegitimate and younger son of John Ponce de Leon, Count of Arcos, a Castilian nobleman, and Doña Leonor Nuñez de Prado, a lady of rank. The brilliant qualities of the youth so far gained him the affection of his father, that he asked and obtained the royal sanction to bequest him his title and estates, to the prejudice of legitimate heirs. He served his apprenticeship to the art of war in the various campaigns in his father, and the knowledge of the greatest ability and personal courage. When scarcely seventeen years old, he obtained at Madrón a victory over the Moors, accompanied with a signal display of personal prowess. Ponce proved himself a man of war, and, which his father so much wished, he was unexpectedly snatched from evil by the death of his enemies, the Marquis of Villena, the minister of Henry IV., through whom the young Ponce, in his day, was a formidable Moorish force, with the house of Guzman, a family which from ancient times divided with his own the interests of Andalucia. In the glorious wars which put an end to the Moorish power in the Peninsula, the marquis took a very active part. Having early in 1492 received intelligence that the important fortress of Alhama was but slightly garrisoned, he marched up to it, and, surrounded it, and invested it, in the garrison. In 1483, he accompanied a marauding expedition against Malaga, headed by the grand-master of Santago, Don Alonso de Cardenas, who entrusted him to the command of the centre; but being suddenly attacked and surrounded by considerable forces of the enemy, whilst in the intricate passes of the Axarquia, the Christian army was completely routed, and very few knights escaped alive. The marquis, after performing prodigies of valour, survived, and succeeded in escaping with a few followers. During the siege of Veles (April, 1487) he saved the life of Ferdinand, who, having been surrounded by a party of the enemy, must inevitably have perished, but for the rescue of the Marquis. He also greatly distinguished himself during the siege of Malaga (May, August, 1487) by repulsing a sally made by the garrison, and he was present at the surrender of Baza (1488) and Granada (January, 1492). This gallant soldier survived the few months that the Moorish war, to which he had so efficiently co-operated. He died in his palace at Seville, on the 28th of August, 1492, from the effects of a disorder brought on by the fatigues of his military life. At his death, Ferdinand and Isabella, with all their court, went for several days into deep mourning.  

PONCE DE LEON, JUAN, one of the early Spanish discoverers in America, was a native of Leon in Spain, and, when a boy was page to Pedro Nuñez de Guzman, Señor of Toral. From an early age he had been schooled to war, and served in the various campaigns against the Moors of Granada. He accompanied Columbus in his second voyage in 1493; and having subsequently distinguished himself in the campaign against the Indians of Higuex, he was appointed to the command of the Moors of Granada. In 1488, having received intelligence from the natives that the mountains of the neighbouring island of Boriquen, or Puerto Rico, abounded with gold, he applied to the governor Orando for permission to explore the island. Having received it, sailed thither, in a caravel, with a few Spaniards, and several Indians to act as interpreters or guides. Ponce landed near the residence of the principal cacique, Aguaynab, who treated him and his suite with great kindness, and gave them a large quantity of gold. With these good tidings Ponce returned to Hispaniola, and obtained from the governor permission, as well as the necessary supplies, to undertake the subjugation of the island. Before the supplies were completed however, his patron Orando was recalled. Ponce, to his great regret, was left in command of the island, the more so as he had patrolled the whole island, and had taken a large number of the natives, who were afterwards employed to be used as interpreters. Ponce wrote La isla de Boriquen, which was published in 1508, and is the work to which allusion is made in this work, which was for that purpose. Afterwards, with God's assistance, I began to spell, and then to pronounce, with all the force I could, though much saliva came from me, and
Mr. Southey says that 'another of Ponce's pupils became a Benedictine monk, and was able to make confession, and explain his creed by word of mouth.' These facts would appear to authorize the supposition that he was taught by the best Spanish writers of the time, as well as by our countryman Sir Kenelm Digby, who, in his 'Two Treatises concerning the Body and Soul of Man' (Paris, 1644, cap. 28, n. 8), says, 'This priest, whom this Spanish monk, as he explained his method, and laid down certain rules as the result of his observations; but this interesting work has been lost, though it is generally believed that Juan Pablo Bonet, who in 1716 published his Reducciones de las Indias, y de ponor señor de hablar los Muudos, 1620, 4to., saw and consulted it. Ponce died in 1584, and was buried in the convent of his order.

POND, JOHN, was born about 1677, and was successively at Maidstone grammar-school, under the tuition of Wales, known as astronomer to Captain Cook's expedition, and at Trinity College, Cambridge. Having been obliged, from the ill health which attended him almost through life, to give up his studies abroad, he settled himself, on his return, at Westbury near Bristol, where he resided till his marriage in 1687. He then settled in London; and in 1711 was appointed to succeed Dr. Maskelyne as astronomer royal. He retired from this office in 1812, and died September 7, 1836, at Blackheath. He was buried at Lee near Blackheath, in the same tomb with his predecessor Halley. (Monthly Notice of the Royal Astronomical Society, for February, 1837.)

Mr. Pond's attention was directed to astronomy by Wales, to which it is stated that, when a boy, he pointed out some apparent imperfection of the Greenwich instruments, as shown in their published results. He did not continue this study at Cambridge, and missed the opportuni-
ty of acquiring that depth of mathematical knowledge which is necessary for the comprehension of the highest branches of the theory of gravitation. The branch of astron-
omy to which he devoted his subsequent life was the de-
termination of the places of the fixed stars; and in know-
ledge of the instruments and methods necessary to be used, and sagacity in detecting and avoiding error, the opinion of those who are best able to judge places him second to none of his day. As a mere handier of instruments, his friend Troughton, one of the best of critics in such a matter, used to say that 'Mr. Pond had, within his knowledge, no equal or rival except Captain Kater.'

The first account which brought Mr. Pond into notice as an astronomer was the following:—when at Westbury, he became possessed of an altitude and azimuth circle by Troughton, and undertook a series of observations, from which he deduced ('Phil. Trans.,' 1809) that the quadrant then in use in Greenwich for determining declinations had changed its form since the time of Drayton: a result which Troughton verified by actual measurement of the instrument. A mural circle (called Troughton's, from its maker) was accordingly ordered, in place of the quadrant; but it was not erected till 1812, when Mr. Pond, who had pointed out (or at least who had proved, for it had been suspected before) the error of the old instrument, was sent to Greenwich for the purpose. The instrument would peculiarly connect his name with the mural circle (then from that time began to be looked upon as one of the essentials of an observatory), if other circumstances did not do this so much more fully, that the accident of his being the first Greenwich astronomer who used the instrument becomes comparatively insignificant. The memoir above cited says, 'Mr. Pond saw, almost intuitively, the vast superiority of this over every other form of the declination instrument, and, with the most scientific and philosophical views, were perhaps the only persons who did clearly see and broadly assert that the operation of a circle did not depend upon having a bearing on each side, or a complete axis.'

In 1825 the mural circle made by Mr. Jones, and intended for the Cape of Good Hope, was sent to Greenwich for ex-
amination. During this process Mr. Pond first used the two instruments for direct and reflected observations of the same star, a method which is thought to have been sugg-
ested for the Cape at retained at Greenwich. Mr. Pond is also the inventor of the method of observing in groups, described in the article CUSCA (p. 189); and it is believed proper to give in before the memoirs which he advocated what is now the universal practice, of depending upon masses of observations for all fundamental data.

In 1833 Mr. Pond had finished his standard catalogue of 1113 stars (in two books, 4to., 1837). He had, however, had no pretension to the same degree of accuracy. The controversy between Pond and Brinkley on the parallax of the fixed stars is a matter of history, on which it only con-
cerns us here to remark that the gentleman who was right in his assertion that the latter did not prove the existence of a sensible amount of parallax. [PA-
RALLIX.]

The works of Mr. Pond are: 1, the volumes of Green-
wich Observations, published during his astronomership; 2, various Papers in the Transactions of the Royal and the Royal Astronomical Societies; 3, a Translation of the 'Système du Monde' of Laplace. His astronomical writings are condensed, and not addressed to those who have a thorough acquaintance with the subject. There is no-
thing of a popular nature in the usual work of an observatory; so that while few except astronomers knew more of the subject of this article than that one John Pond, Esquire, was not a man. Those who are interested in the cause of the royal, the following is the testimony of the Astronomical Society:—'It is not too much to say that meridian side-
real observation (which excludes the Herschelian branch of astronomy) is at present the best and most advanced, that our countrymen put together since the time of Bradley.'

PONDICHERRY, a considerable town on the sea-cost of the Carnatic, in Hindustan, formerly the principal seat of the French power in the East Indies, in 11° 57' N. lat., 79° 46' E. long., 65 miles south by west of Madras.

The first commercial expedition of the French which succeeded in reaching the East Indies by sea was composed of two vessels fitted out from a port in Bretagne (a.d. 1601); but the vessels were wrecked on the Maldives Islands before reaching their ultimate destination, and their commander returned ten years afterwards to France. A company of mer-
chants sent out some vessels from a port in Normandy to Java (a.d. 1616 and 1619), but the success of this attempt was not such as to afford much encouragement. The next expedition was from Dieppe (a.d. 1633), where some mer-
chants fitted out vessels and made several voyages. A company, established a.d. 1642, formed some settlements in Madag-
asar, but these in a few years dwindled almost to nothing.

In a.d. 1664, Colbert presented to Louis XIV. the plan of an India Company, which received the royal sanction. The first ship which brought the new Company into notice as an astronomer was the following:—when at Westbury, he became possessed of an altitude and azimuth circle by Troughton, and undertook a series of observations, from which he deduced ('Phil. Trans.,' 1809) that the quadrant then in use in Greenwich for determining declinations had changed its form since the time of Drayton: a result which Troughton verified by actual measurement of the instrument. A mural circle (called Troughton's, from its maker) was accordingly ordered, in place of the quadrant; but it was not erected till 1812, when Mr. Pond, who had pointed out (or at least who had proved, for it had been suspected before) the error of the old instrument, was sent to Greenwich for the purpose. The instrument would peculiarly connect his name with the mural circle (then from that time began to be looked upon as one of the essentials of an observatory), if other circumstances did not do this so much more fully, that the accident of his being the first Greenwich astronomer who used the instrument becomes comparatively insignificant. The memoir above cited says, 'Mr. Pond saw, almost intuitively, the vast superiority of this over every other form of the declination instrument, and, with the most scientific and philosophical views, were perhaps the only persons who did clearly see and broadly assert that the operation of a circle did not depend upon having a bearing on each side, or a complete axis.'

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which the establishment had been formed, were going to ruin, through the mismanagement of those who directed it, the financial mismanagement of which this was a warning which were carried on near the close of the seventeenth and the beginning of the eighteenth centuries. In 1719 it was united with several other trading companies into one body, to the trade of which that of the Company of Law [Law, John] granted many privileges; but its affairs were conducted with little wisdom, except with regard to Pondicherry, the defences of which were further augmented, as governor, obtained from the court of Delhi the permission to encroach on the cession of the territory of Karikal in the district of Tanjore.

During the government of Dumas, the nabob of Arcot was expelled and slain by the Maharrats; and many of his family and subjects took refuge at Pondicherry, which was in consequence threatened by the victors; but the firmness of Dumas induced the Maharrat general to give up the enterprise and make a treaty with the French. About this time the French colony in Mauritius, or the Isle of France [Mauritius], was rising into importance under the care of La Bourdonnais; Bourbon had been colonised some time before [Bourbon], both belonged to the India Company. There were negociations between the two, at least till Hogly, 16 miles above Calcutta, was at the same time rising into importance under the management of Dupleix, who extended the commercial relations of the settlement in all directions, and thus raised Pondicherry to the first rank. Mahattah and made director-general of the affairs of the Company in the East, which were at that time in their most prosperous condition.

In 1768 a French squadron, fitted out at the Isle of France by the activity of La Bourdonnais, arrived on the coast of the Carnatic, and having landed a considerable force, obliged Madras to surrender. But discord between Dupleix and La Bourdonnais incurred the French interests, and the latter left the coast. Dupleix retained Madras, which La Bourdonnais had agreed to restore, and attempted, but without success, to capture Fort St. David, another English settlement. In 1748 Pondicherry was attacked by the English with a considerable fleet and army under Admiral Boscawen and Major Lawrence; but the siege was raised after several days, and the English retreated.

In 1749 Dupleix engaged in an attempt to raise two claimants, Miraphar Jum and Chunna Sahib, to the offices of subahdar of Viceroy of Deccan and of nabob of the Carnatic, by dispossessing the then occupants. The nabob of the Carnatic, Anwar-ad-dien, was defeated and slain, a.d. 1749, and the subahdar, though supported by the English, was killed. It was in this state that the British commenced the management of the French (a.d. 1750), and was succeeded by the claimant supported by Dupleix. Dupleix was appointed by the new subahdar governor of all the Mogul dominions on the coast of Pegu, and was advanced, in consideration of the aid he had given to his elevation. The claimant of the nabobship of the Carnatic was established as deputy of Dupleix at Arcot. An attack on Mahommed Ali, rajah of Trichinopoly, son of Anwar-ad-dien, was defeated by the intervener of the English, who sent to establish Mahommed Ali nabob of the Carnatic. The French resisted and obtained support among the native powers, and severe but insidious hostilities continued for some time. Negotiations were then tried, during which Dupleix was superseded, and a treaty was concluded which left Mahommed Ali nabob of the Carnatic (a.d. 1754). About this time the French had obtained of the subahdar of Deccan (Salaubat Jung), necessary for the protection of Pondicherry, right of a coast road, lying entirely within the dominions of an extensive line of coast in the Northern Circars; these by the treaty were to be given up, but the French appear to have retained them until, in the following war, they were expelled by the English.

In 1757 the war with the Carnatic was renewed: in 1758 the Count de Lally arrived at Pondicherry with strong reinforcements from France, and immediately attacked Fort St. David, about 16 miles south of that town, which he took with great loss. The British, at Devicottah, another of their posts. He next attacked the king of Tanjore, but unsuccessfully. Arcot and the black town of Madras were indeed taken, but Fort St. George (the fortress) of the Carnatic was not taken, which was defended by the financial views of the English, with an exhausted commissariat and an empty chest, retreated to Pondicherry. Subsequent hostilities were entirely to the disadvantage of the French; they were defeated at Wandewash, Arcot was retaken (a.d. 1760), and the English laid siege to Pondicherry, which surrendered early in the next year. Of the several fortresses which were given up, the one or two posts which the French retained in the Carnatic followed its example; and Lally returned to Europe to perish by an iniquitous sentence on the scaffold.

At the French invasion of 1762, the ports of Pondicherry on the Carnatic were restored. The management of the India Company, whose affairs were at a very low ebb, underwent considerable alterations. Some of their trading privileges were abolished, though in a few cases compensation was granted in the shape of annuities. The management of the parties benefited by the abolition. Subsequent changes (a.d. 1769) nearly annihilated the Company; its remaining privileges of exclusive trading were suspended; its vessels, crew, and stores, were taken over by the English, which were given up to the government; which undertook, in return, the payment of most of the demands on the Company, and the creation of some perpetual annuities to meet the claims of the proprietors of the Company's stock.

In 1765 the rebuilding of Pondicherry was commenced, and in 1770 the population amounted to 27,000, almost entirely natives. But the superiority of the English in Hindostan was now decided. On the breaking out of hostilities between France and England in 1778, the command of Pondicherry was taken by Sir Hector Monro after a gallant defence. The other French possessions were also seized; but some French officers and soldiers engaged in the service of Hyder Ali, of the Madras army, were allowed to return. In 1782 considerable armaments both from France and England arrived in India, and a body of 2000 French joined the troops of Hyder Ali. Several indecisive actions were fought by the hostile fleets under Sullivan and Hughes, and the French withdrew into the bombas, in 1783, which the English, having obtained from the Dutch, was taken by the French; but Pondicherry and their other territorial possessions in India were not recovered till the peace of 1783. In 1798 they were recovered by the English, and the town was again conquered in 1803; and again restored in 1814.

The possessions of France in the East Indies now comprehend Pondicherry and Karikal, with their dependencies on the Coromandel (or Carnatic) coast, Yunnan and its dependencies, with the factory of Maulliparam in the Northern Circars; Chandernagore and its territory, with Gorettee and some other factories, in Bengal; and Mah and factories at Calcut and Surat on the western coast. They have also factories at Muscat and Mocha in Arabia. The island of Bourbon still belongs to the French: but Mauritius, or the Isle of France, has passed into the hands of the English. (Malta Brum.)

A small native town situated far from the shore, and consists of two parts, the white town and the black town. The white town is handsome; the streets are built with remarkable regularity, intersecting each other at right angles, and are paved with good, flat, and elevated, and have flat roofs; they are covered with stucco, white or yellow, and are adorned with stone columns or pillars. In the central of the city is a spacious square planted with trees and laid out in walks, and open on the east side to the sea. The black town lies to the south of the white town, from which it is separated by a ditch or canal, with trees planted along the bank: it is laid out almost as regularly as the European quarter, but the houses are for the most part mere huts. Of the fortifications nothing remains but a brick tower, where the flag is hoisted. The French are debarred by treaty from restoring the fortifications, or from maintaining any force beyond what is necessary for the protection of the town.

Fortress of Pondicherry is a small and very insignificant place, consisting of one square, a handsome building; a new bazaar, and at least two churches, one of them formerly belonging to the Jesuits' college, and the other to the Capuchin convent; the college buildings have been converted into a residence for the Catholic bishop and clergy; the convent was destroyed by the English on the capture of Pondicherry in 1761. There is a grand pagoda in the black town, a building of vast size and grotesque architecture.

The population of the town and suburbs is computed to be 40,000. Trade is dull; the fiscal regulations of the British prevent the carrying on of any traffic with the interior. The soil is fertile, and there is no want of sugar-cane, millet, dye and aromatic woods, and mulberry-trees are cultivated in the neighbourhood. The exports consist of rice, drugs, sugar, indigo, and blue linens. The
importas are lace, and articles of dress, furniture, jewellery, and books. There are two courts of justice, a mint, a college, schools for whites and for blacks, a botanic garden, a mont de piété, or office for small loans, and several charitable institutions.

PONGO, an African word supposed to be corrupted from Boggo, and said to be applied indifferently to the Chimpanze, the Mandril, and the baboons of that country. Buffon appears to have been the first who used it to denote that gigantic species of Orang-Utan. Audebert restricts the appellation to the Chimpanzees. Wurbm first definitely applied the term to the Pithecus Warumbi. Cuvier, together with most modern zoologists, follows Wurbm in this application, and the monospecific Orang-Utan (Pithecanthropus). In speaking of Pithecus, says, 'This is the remarkable animal called Pongo by M. Wurbm; an ape, about whose natural station great diversity of opinion exists. M. Cuvier places it in the order of Artiodactyla. It is a large and strong brute, the latter is merely the young. Illiger, on the contrary, considers it so closely allied to the baboons, that he calls it a Cynocephalus. From these opinions we may draw the inference that it is intimately connected with both, while subsequent information has incontestibly proved it is distinct from either. It is, in short, an ape with the aspect of a baboon.' We are of the same opinion with Professor Owen and others who take Pongo as the name or sign of the adult orangenut species, Pithecanthropus.

PONIATOWSKI, STANISLAUS, COUNT, a Polish nobleman, born in 1678, who took the part of Stanislaus Leckzinski and of his protector Charles XII of Sweden, against the Austrians and the Russians, and for the same party, as it was called, in Poland. [Augustus II. of Poland; Charles XII. of Sweden.] He followed Charles in his adventurous expedition into Russia, with the rank of major-general in the Swedish army, and after the defeat of Pultawa militarily helped the king to effect his escape with a handful of men into the Turkish territory. Having seen his master safely lodged at Bender, Poniatowski repaired to Constantinople, as his agent, to forward his interests with the Sultan. He did not, however, meet with much success, and the Sultan was not the most experienced diplomatist. Alone, without connections, the representative of a fugitive king, who was himself a kind of prisoner in the hands of the Turks, he contrived to engage the Porte to espouse the cause of Charles and to attack Russia, and he obtained influence enough to obtain the dismissal of several viziers in succession, for having thwarted their views.

The curious particulars of his negotiations at the Porte are related in a lively manner by Voltaire, in his 'History of Charles XII.' At last, when Charles resolved to quit Bender, Poniatowski followed his master into Germany, where he remained with Stanislaus Leckzinski, the protege of Charles XII, who was then driven by the Austrians from his Polish seaport of Gdansk into the Austrian province. Poniatowski remained with Stanislaus till the death of Charles, when all hopes of seeing him restored to the crown of Poland having vanished, Poniatowski made his way to his native Augustus, which he had not only restored to him his property, but he made treasurer of Lithuania, general of the guards, and lastly, palatine of Masovia. After the death of Augustus he endeavoured to effect the restoration of Stanislaus Leckzinski, but did not succeed, and the elector of Saxony was elected king. [Augustus III.]

Poniatowski made his submission to the new king, who took him into favour, and made him, in 1755, castellan of Krakow, which was one of the chief dignities in the kingdom. Some time after he retired to his estates, where he died in 1762. He married a Princess Czartoriski, by whom he had two sons, one of whom became afterwards king of Poland [Stanislaus Augustus], and the other entered the Austrian service and became lieutenant-general of artillery.

PONIATOWSKI, JOSEPH, PRINCE, born at Warsaw, 1723, eldest son of Andrzej Poniatowski, lieutenant-general of artillery in the Austrian service, and nephew to Stanislaus Augustus, the last king of Poland. He entered the Austrian service, and became colonel of dragons and general of the emperor Joseph II., with whom he made a campaign against the Turks in 1767, which took him to Constantinople, where he was obliged to resign his command in consequence of the king's weakness and partiality for Russia. In 1774, when the Poles again rose against the Russians, Joseph Poniatowski served under Kosciusko, but Kosciusko being defeated, he was obliged to emigrate, and he retired to Vienna.

In 1799 he returned to Warsaw, which was then under occupation of Prussia, and the Prussian government restored to him part of his estates, where he spent several years. After the battle of Jena, in 1806, and the invasion of Prussia by Napoleon, the French armies advanced into Poland, and Poniatowski was appointed by the king of Prussia military commander of Warsaw, where he formed a national guard for the security of the city. In this capacity he received the French general Murat, who took possession of Warsaw, in November, 1806. Poniatowski, first a friend, and then avowedly not accepted by the French, under the influence of the Duke of Wellington, the Prussian commander in chief, the French were driven from Warsaw, and a national army was formed, of which Poniatowski took the command, and which rendered great services to the French during the campaign of 1807 against the Russians. By the peace of Tilsit, Russia, and Austria ceded to France the greater part of Poland, and the duchy of Warsaw was given to the king of Saxony. Poniatowski remained minister at war for the duchy, but the Polish army was scattered among the French garrisons in Germany, and some regiments were captured by the Russians. The Poles, while in Warsaw, declared between Austria and Napoleon in 1809, Poniatowski, who had only a small force left with him, after fighting against the Austrians, was obliged to evacuate Warsaw, but he was allowed to return to Poland after invaded Galicia, and called the inhabitants to arms. By the peace of Vienna (October, 1809), Galicia was taken away from Austria and united to the grand-duchy of Warsaw. The king of Saxony became emperor of Poland in 1812, Poniatowski, who had in the mean time increased and disciplined the Polish army, obtained the command of the fifth corps of the 'grand army,' which was composed entirely of Poles. He fought bravely in several battles against the Russians, and was wounded on the banks of the river Elster, which was-swelled by the rains, he spurred his horse into the river and disappeared in the water.

Joseph Poniatowski was not only an able and brave officer, but he was also a man of strict and upright principles, and his integrity was well known. Less confiding that most of his countrymen in the promises of Napoleon, he followed, from a sense of duty to his country, what he conceived to be the only chance left of effecting its independence. Joseph Poniatowski left no children.

PONS. [Charlente Inferiure.] PONS. [Aroli.] PONS. [Aroli.] PONS. [Aroli.] PONTE. [Bassano.] PONTEFRAC'T, an ancient borough, a market-town, township, and parish in the upper division of the wapentake of Osboldsfield, in the hundred of Pontefract, and in the West Riding of Yorkshire. By the Reform Act the borough includes Ferrybridge, the castle precincts, Pontefract Park, and the townships of Tanshelf, Monkhill, Knottingley, and Carlton. These places, with the exception of Pontefract Park, which comprises about 1000 acres, and a part of the townships of Monkhill and Knottingley, form the parish of Pontefract, which contains nearly 10,000 inhabitants and send two members to parliament. The parish extends over 7790 acres. Pontefract Park comprises 1300 acres. The town is wellsituated in the vale of Pontefract, and has four aldermen and twelve councillors. The honour of Pontefract belongs to the crown, as part of the Duchy of Lancaster; it has local courts, and a manor of great value. The Court Baron for the recovery of debts under five pounds is held at Pontefract once in three weeks,
and by adjournment from thence, at Eddersfield, Bradford, Leeds, and Barnley. The deorts' goal is at Rothwell. Pontefract is 173 miles north-north-west of London, and twenty-four miles south-south-west of York.

This town is of great antiquity, and of considerable historical interest, the townships of its name are alike unknown. The legends of ancient historians and the conjectures of those later date are equally unworthy of notice. According to Camden its name was changed to Pontefract when the castle was ceded to Kirkby in the time of the Saxons, and it is not improbable that it was one of the first places in England at which a church was erected and Christianity preached.

The national schools are supported by the town, the bishop, and the parish. The church of St. John the Baptist was enlarged and a grant of the place; in the tenth year of William, his vast possessions were confirmed to him. Soon after he began to build his castle, which partook of the features of castle, fortress, and palace, and is said to have been a very conspicuous part of the town. Pontefract, from some fancied resemblance to a place so called in Normandy, where he was born. The castle was built on an elevated rock, and it had a most extensive and picturesque view of the surrounding country. It was not surrounded by a moat; it was defended by having the surrounding country taken by blockade. The wall of the castle yard was high, and flanked by seven towers. A deep moat was cut on the western side, where were also the barbican and drawbridge; these works were built of the old manor, and a second tower, and some of them were protected by drawbridges. The dungeons were of a frightful nature. The area covered and enclosed by this immense building was about seven square miles.

Ibert de Lacy was a great favourite with William, and received from him as a reward for his adherence and service one hundred and fifty manors in the west of Yorkshire, the north of Shropshire, and four in Lincolnshire. These vast possessions were confirmed to his son Robert, called Robert de Pontefract, by William Rufus; they descended from him to his son Ibert, and continued in the family till the year 1262, when the king, having been deprived of his children, left his estates to his daughter Alice, who was married to Thomas, earl of Lancaster, uncle to Edward II. In the quarrels between that weak-minded prince and his nobles, the castle of Pontefract was seized, and was partly burned. He was taken prisoner with many other barons, and brought to Pontefract Castle, which had fallen into the hands of the royal army. Here he was imprisoned for some time, tried by his peers, some of whom were his mortal enemies, convicted without being heard in his own defence, suffered many indignities, and was afterwards hurried away to execution. He obtained the favour of dying on the block, whilst the barons who were his adherents were hanged, drawn and quartered. Here, at Pontefract, in the time of Richard II., his imprisonment and death; but whether he was murdered or starved to death has not hitherto been satisfactorily decided. Here the Duke of Gloucester, afterwards Richard III., died. Here, in the reign of Henry IV., the fortress surrendered to the famous Robert Aske, captain-general of the Pilgrims of Grace; and during the civil wars between Charles I. and the parliamentarians the castle was frequently besieged and defended by both parties. The garrison, after having been reduced from 600 men to 100, surrendered, in 1649, to General Lambert, having first proclaimed Charles II. successor to the throne of his father, and done all to defend it that a garrison of 100 men could do, and the town and castle was given up by order of parliament, and all the valuable materials were sold. For 600 years the castle of Pontefract was the ornament and terror of the surrounding country; at the present day little even of its ruins remain. The area occupied by it has been taken away and a quarry of filtering-stones, which are in great request in all parts of the kingdom. The parish church of Pontefract, dedicated to St. Giles, is small, and has no great pretensions to notice. The more ancient church of All Saints, the original parish church, is in the form of a cross, with a handsome tower in the middle; it is mentioned by Rickman as deserving of attentive examination. It was built in the time of Henry III.; it is altogether in the style of that period. The other places of worship are the Roman Catholic P. C., No. 1152.

chapel, the Friends' meeting-house, and the Independent, Wesleyan, and Primitive Methodists' chapels.

The town has a subscription library, a mechanics' library, and a news-room. The free grammar-school was established in the reign of Edward VI.; it fell into neglect, and was explained to the church in 1601 by the prior of the Holy Trinity, Elizabeth, and again about a century afterwards. It was re-chartered in 1792, by George III., and placed under the viscountial control of the chancellor of the duchy of Lancaster. This was the second and last occasion for which the Schoolmaster of Elizabeth Hastings's exhibitions at Queen's College, Oxford, was offered to take boarders.

The other charity-school of Pontefract is now merged in the other grammar-school, which caters for both sexes. It is situated in the old town, and is cared for by the Wesleyan Primitive Methodist places of worship. The school is supported by a grant from the charity (the school-charity) appropriated 150l. from its funds towards the erection of the said grammar-school.' (Boothroyd's 'Pontefract.')

The British school, which is supported by small payments from the children, and subscriptions, was commenced in 1831, and re-established in 1837; the theatre having been purchased and divided into two rooms capable of accommodating 400 pupils of both sexes. The town-hall is a handsome building, which was erected on the site of the old market-place and town-hall, and surrounded by a wall, and the corporation; the parish and petty sessions are held in it. The spring quarter-sessions are held in the court-house during the Easter week, a commodious modern building, which is supplied with the expenses of those sessions.

The gas-works were constructed in 1832, at an expense of 4200l. The races, formerly held yearly in September, are extinct; the course occupies a portion of the park district. There are at Pontefract a number of public and private baths, and hospitals, which mostly bear the name of their founders; they afford the usual benefits, and are open to the common objections made to such charities. The market is held on Saturday, and is supplied with the usual weekly goods. The annual fairs for the sale of cattle. The general aspect of the town is neat, airy, and spacious; it is chiefly celebrated for its extensive gardens, nurseries, and liquorice-grounds; its soil is rich and fertile, and a quantity of gramineous crops are supplied by Pontefract to Leeds, Wakefield, and other populous towns in the county. (Communication from Yorkshire.)

Pontifex was the name by which the Romans designated the members of the most illustrious of their great colleges of priests. The pontiffs are said to have been instituted by Numa Pompilius for the purpose of taking care that the laws relating to religion should be observed by individuals as well as by the state. According to Livy (x. 6), was four, two for each of the tribes of the Ramnes and Tities. Cicero (De Rep., ii, 14) says that their number was five, but he includes the Pontifices Maximus, or champions of the people. The minor pontiffs were a college of priests of which scarcely anything is known: Cicero mentions three members of it (Harpag. Rep., 6), and Niebuhr (Hist. of Rome, i, note, 172) supposes that it belonged to the Locures, who had no representative in the great college of pontiffs. The name of the minor pontiffs was afterwards transferred to the secretaries of the other pontiffs (pontifices majores: Liv., xxx. 17, in modern, 27). When the Great State-Office had become accessible to the plebeians, they also obtained the privilege of being represented in the college of pontiffs by men chosen by themselves in the same manner as the magistrates were elected. In 300 B.C. by the Qutalnian law, by which the original number of pontiffs, through the addition of four plebeians, was increased to eight, or, including the chief pontiff, ten. (Liv., xvi. 6, 9.) The chief pontiffs continued to be taken from the patricians to the year 254 B.C. (Liv., Epit., xviii.) This number remained the same for more than two centuries, until in 81 B.C. the dictator Sulla raised it to fifteen. (Liv., Epit., 89.) J. Caesar added one more pontifex (Cass., xlii., 11). In the early ages of the history of Rome the pontiffs were elected by the kings, but after the overthrow of the king-power the college exercised the right of co-oposition (Dionys. Hal., i. 23; Liv., xvi. 6, 9). The chief pontiff and his retainers were of course favourites, and the best persons of the office of pontiff was partly transferred to the people by the Dominican law; for, according to this law

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the co-optation of the college was still necessary as a religious ceremony, after a person had been elected by the people. (Cic., in Rull., i. 7.) When Sulla increased the number of pontiffs, he at the same time gave the college the full right of co-optation; the tribune Labienus indeed, in 63 B.C., revived the Domitian law, but it was again abolished by Antony. (Dion Cass., xiv., p. 305.) The chief pontiff, who at first seems to have been appointed by the college, was afterwards elected by the curies in the comitia curiata, and generally taken from the number of the pontiffs themselves, or from those who had held the highest offices of the state. (Livy, xlii. 42, comm. 1.) The functions of pontiff were not limited to the service of any particular deity. It had very extensive powers, and not only had the superintendence over all matters of religion, but even those which were not directly religious, such as military operations, by appointment (Cic., Pro Dom., 13), and funeral ceremonies. They had a direct judicial power, and might in some instances even punish with death. (Cic., De Legg., i. 9; comp. Liv., xiii. 57.) The chief pontiff, whose office, like that of the ephor, was for life, and who was not responsible either to the senate or the people, was supreme judge in all matters relating to or connected with religion, and from his sentence an appeal could only be made to the people. In cases where a magistrate was or his person seized (Livy, xlii. 42), for the few instances of later times where a tribune interposed and modified the sentence of the chief pontiff seem to have been anomalies. His word was law over magistrates, as well as individuals; and the former, if acting contrary to the laws of religion, might be fined (Livy, xxvii. 51; Cic., Philipp., vi. 8; Liv., xlii. 42), or compelled by the chief pontiff to resign the office. It also formed part of his duties to regulate the calendar, and to interpret the ceremonial laws, for he and his college were in the exclusive possession of the ritual books (commentarii sacrorum or libri pontificales), in which all religious rites were laid down, and by which all religious acts were decided. They were the only point which belonged to their jurisdiction. The rules and regulations which guided the pontiffs formed a large body of law, called 'Jus Pontificii.' (Cic., De Or., i. 45; iii. 33; Pro Dom., 13.) The oath tendered to a newly elected pontiff was not to profane the sacred rites by any untimely publication, most probably referred to these books. (Dionysus, Hal., i. 133.) The chief pontiff had moreover to keep a kind of state archive (the commentarii pontificum, annales pontificum, or annales maximi), in which he recorded the memorable events of every year, and which were exhibited at his house for the inspection of the people. The most important events of the curia could not be held when the pontiff had no religious grounds for preventing them, and their presence was indispensable at these meetings. (Gellius, v. 19; Dionysus, Hal., i. 41, comp. with x. 32.) Among the external distinctions of the pontiffs, were the toga praetexta, and the figur of a cap with a rope of horse hair, and with an apex. They lived in public buildings on the Via Sacra (Suet., Cæs., 48), or in the house of Numa (Plin., Epist., iv. 11). The chief pontiff was not permitted to quit Italy (a rule first violated by P. Licinius Crassus); he was not allowed either to see or to touch a corpse, or even to visit a house in which there was a dead body. After the death of his wife, who, according to the laws, should always be a woman of great moral virtue, he was not permitted to marry again. (Plin., Paneg., 83.) He also elected the vestal virgins, and superintended their moral conduct. From the time that Augustus assumed the office of chief pontiff, it was held by him for life, and handed down to the time of Gratianus, who disliked this dignity. (Zosim., iv. 36, 9.) The title P.M., or P.M., Pontif. Maximus, appears on some of the coins of the Roman emperors. [Caligula.] The mode of living of the Roman pontiffs does not seem to have been much more sober or simple than that of some priests of modern times. (Horat., Od., ii. 14, 26, 47; Martial, Epigr., xii. 48, 12; Macrob., Sat., i. 9.)

PONTIUS PILATE. [Pilate, Pontiffs.]

PONTOIS. [Sens et Oise.]

PONTOON, or PONTON. This term is employed by the French to signify any large or flat-bottomed boat; but in the latter case to which they are used in the formation of floating bridges for military purposes.

The conveyance of an army with its artillery and baggage across the rivers which intersect its line of march is one of the most difficult as well as the most important operations in military tactics. The occupation of an advantageous position on the river bank and the protection of the approach materially influence the success of a campaign; and the favourable moment may be lost, if means should not be at hand to overcome the obstacle presented by a deep and rapid stream. Such obstacles must be attended with the most fatal consequences to a retreating army, when it is prevented by a river from getting beyond the reach of an enemy; for its safety, in that case, depends upon the power of passing the river without delay, and then upon the timely removal or destruction of the bridge immediately afterwards.

History presents us with innumerable instances, both of the ruin of armies caused by the want of means to make good their retreat, and of the timely river crossing which has served as the means of leading them into the interior of the enemy's country. In almost every campaign of Napoleon from Moscow, had it not been for the extraordinary care used by the chief of the French engineers to preserve the materials requisite for the formation of a bridge, the whole of the army must have been captured or destroyed on the Our, the Dnieper, or the Donau, and the army that had been formed by the order of Xerxes over the Hellespont at the time of his unfortunate expedition into Europe, deserve to be considered as the most famous works of that nature which were constructed during ancient times for the passage of seven vessels. Of such boat-bridges for military purposes the most remarkable, in modern times, is that which was formed, by the engineers of the British army, across the Adour, in the south of France, in 1814. It consisted of 25 boats, each 50 feet long, and was employed in the same way as those used by Napoleon; the boats were moored at distances of nearly 40 feet from centre to centre. At first, hawser resting on their decks were strained by capstans and made fast to some heavy gun which were laid behind the retaining walls on the south side of the river, and these ropes carried the planks which formed the roadway; but after a few weeks they were removed, and replaced by timbers, which from their steadiness were and preferable. The breach of the river at the place where the bridge was formed is 810 feet, and boats were moored across, both above and below the bridge, for its protection.

The precise period at which pontoons, or flat-bottomed vessels, were first employed to support a bridge is unknown. Folard observes, in his observations on the fifth book of Polybius, that for passing rivers the Germans in his time used vessels formed of timber frames covered with leather; he adds that the Dutch troops had pontoons of wood covered with tin, and that the French took some of them at the battle of Fleurus, which was gained, in 1698, by the Maréchal de Luxembourg over the Prince of Waldeck. Mention is frequently made of pontoon-bridges, both in Germany and Italy in the annals of the college of the pontiffs, particularly during the campaigns of Marlborough; and, for the speed with which they are said to have been executed when required, it is probable that a corps of men was then particularly employed in that branch of service.

The employment of pontoons in peace was quite different but little from those used in the times above alluded to; they
were from 17 to 21 feet long; from 4 to 5 feet broad, and from 2 feet to 2 feet 3 inches deep. In the formation of the bridge, a rope was tightly stretched across the river; the vessels were then rowed to their places, and each was made fast at one end to the rope; another rope was then stretched across the river, parallel to the former, at the opposite ends of the pontoons, and to this rope those ends were made fast. When a strong current set obliquely across the river, the sides of the vessels were retracted together by rope braces stretched diagonally across the intervals, in order that the effect of the current upon each might be counteracted by a like effect on the next; and, in very rapid streams, anchors were also thrown out from each, in every second or third pontoon according to circumstances.

Timber-baulks, or joists, were then laid from the shore to the first pontoon, from that to the next, and so on, at intervals from each other; the breadth of the bridge or the weight to be supported. Every two in the direction of the length were attached together by a bolt, which allowed the bridge to yield to the rise or fall of the water. Above these timbers were placed the planks, or flooring-planks, close together and perpendicular to the length of the bridge; and these were kept down by a rib-band or a plank, which was fastened over their extremities or with their extremities confined between the cross-pieces nailed to the frames as above-said: the frames are laid close together above them, and their ends are kept down by the rib-bands, which are attached to the planks passing over them, and under the latter, at intervals. In those rib-bands are fixed rowlock pins, and, when the bridge is not formed, the rib-bands being then placed parallel to the frame of the raft, the latter may be moved on the water by the oars.

Colonel Pasley, to whom the department of military engineering in the British service is so much indebted for the improvements which he has introduced into every branch of art, is the inventor of this form of pontoons, which, has for many years devoted particular attention to the subject of military bridges. The form of the old pontoons rendering them difficult to manage in the water, and their great weight, when it was necessary to transport them from one place to another, caused them to be a serious encumbrance to an army on its march, that officer was led to construct the pontoons in the form of canoes, with decks, each end being shaped like the head of a boat, in order that they might both resist the waves and be propelled by the rowers, with either end foremost. They are constructed of light timber frames, covered, except the deck, with sheet copper; and each vessel is formed in two equal parts by transverse partitions, so that the demi-pontoons may be separated from each other when the bridge is to be conveyed on carriages by land with the army. When in the water, the parts are connected together by a rope, which passes through two perforations in the keel, near the plane of junction, and by a rectangular frame of wood, which is laid along the deck, and attached to it by lashings. Each half-vessel is also divided into two compartments by a partition; and small partitions are placed between which the pontoon may for a time be kept afloat, should a hole be made in its side by a shot or by any other accident.

Sir James Colleton, some years since, invented pontoons of a cylindrical form, some of which have been occasionally employed, both for experimental operations; and cylindrical pontoons of tin, which were subsequently invented by Major (now Colonel) Blanchard, have lately been introduced into the service. These last have hemispherical ends, and are divided both longitudinally and transversely into several compartments by partitions of tin, both to increase their strength and to prevent them from sinking in the water in the event of their being accidentally perforated in any part. They possess the advantages of great lightness and buoyancy; but they have not the durability of copper vessels, and they must be very liable to be injured when transported by land, particularly if a march should take place. The vessels by which the pontoon may for a time be kept afloat, should a hole be made in its side by a shot, or by any other accident.

In 1836 the comparative merits of Colonel Pasley's and Colonel Blanchard's pontoons were tried upon the Medway, now at the old fortifications near the town of Rochester, and pieces of artillery, were made to pass over the river on bridges supported by vessels of the two kinds. The order of march was precisely such as to subject the bridges to the severest test, and the vessels of both kinds of the two pontoon systems employed on this occasion appears to have led to a preference in favour of the pontoons proposed by the last-mentioned officer.

The breadth and depth of one of Col. Pasley's pontoons is 21 feet and 16 inches; diameter of the river, and a half of the coil of wire, 21 feet 6 inches. The breadth of each kind of pontoons is 22 feet.

The manner of forming the bridge, with both kinds, is nearly the same. A rectangular frame, whose length is about equal to the breadth of the platform for the intended bridge (12 feet), is laid down longitudinally on the deck of the canoe, or on the surface of the cylinder, and is kept in its place by rope lashings; on the upper surface of this frame, in the direction of its breadth, are nailed pieces of wood in pairs, at equal intervals; the distance between every two in each pair being little more than equal to the breadth of a baulk, or joist (2 inches), one extremity of which is to be fixed in a hole bored obliquely into the frame, and the other, equal to the number of baulks which are to support the choises or planks forming the roadway. A raft is formed with two of these pontoons, by placing them parallel to each other, at a distance, from centre to centre, equal to about 12 feet. When two baulks of this kind are called, are made to rest upon the frames before mentioned, the distance between them being equal to the intended breadth of the bridge, and they are kept steady by having near the extremity a hole bored through them, into which enters an iron pin fixed vertically for the purpose in the frame: they are also made fast to the pontoons by ropes passing through rings on the decks. Three or more baulks are then laid down parallel to the transverse with their extremities confined between the cross-pieces nailed to the frames as above-said: the choises are laid close together above them, and their ends are kept down by the rib-bands, which are attached to the planks passing over them, and under the latter, at intervals.

When the last mentioned kind of raft is formed, the extremities of men attached to each raft of two pontoons, namely 1 non-commissioned officer and 6 privates, can dismount two vessels and their stores from the carriages, launch them, and form the raft in a quarter of an hour. All the remaining men, together at the same time, the whole bridge may be formed in another quarter of an hour. After the passage has been effected, the bridge can be dismantled in eight minutes, and so placed that it can be conveyed to the shore. The vessels and stores re-packed on the carriages in a quarter of an hour.

In order to convey the pontoons with an army, each is placed, with all its accompaniments, on a four-wheeled carriage. Col. Pasley's pontoon is provided with two wheels for each pontoon; the latter being separated into two demi-pontoons, which are placed side by side above their stores. The shortness of these carriages enables them to be turned within a smaller space than would be required for a four-wheeled waggon.

The inconvenience attending the transport of pontoons, or the necessity of passing a river when they are not at hand, has induced commanders of armies to have recourse to bridges supported on rafts of timber or on empty casks, which in Europe can always be procured. Each raft may consist of four or more rough trunks of trees lashed together, and may be retained in its place by anchors, or by being made fast to the vessel across which it passes. The raft and choises are applied as in a pontoon bridge. Perhaps the greatest raft-bridge ever formed is that which was executed by General Sokolinski over the Niemen at Grodno, in 1792. The breadth of the river was twenty-eight feet, and from twenty to twenty-eight inches in diameter, were united by tens, and every ten were bound together at both ends by transverse braces, so as to form a raft, which, as all the large vessels are contiguously placed side by side, is described as a voussoir of a bridge. All the voussoirs, fifty-seven in number, were placed in the river, side by side, in an arc of a circle having its convexity towards the upper part of the river, and a radius of three hundred and eleven feet, or 116 feet long and 22 feet wide, which was moored in the river where the current was the most rapid. Baulks and planks were placed, as usual, above the rafts to form the
road. The breadth of the river at that place is about 1080 feet. (Berard, Equilibre des Poitiers.)

A strong raft was formed, as was usual in boats, by the Russians and Prussians over the Elbe near Dresden, in 1813: one course of logs disposed parallelwise to each other formed the bottom of each raft; cross-timbers were laid above these; and over them was a third course of timbers, each placed in the interval between two of those below. The timbers were well lashed together; a strong cable was stretched across the river on each side of the bridge, which was further strengthened in its place after death, and a road was formed on each side. While the British army was serving in Spain during the late war, the roofs of buildings were occasionally taken to form rafts: the rafters served as balks; and, for want of nails, the planks were kept down to the rafters by the planks forming the trees split to two longitudinally and tied by willow twigs.

A cask bridge is sometimes formed in the following manner:—a certain number of casks are placed side by side with a river and mooring boat in the middle; axes are placed at intervals from foot to foot in horizontal positions; the casks are lashed to two gunwale timbers, as they are called, which extend along the upper side of the pier at the extremities of the casks; two of these piers are placed at an interval of almost ten feet from each other, and they are connected together by the balks which support the platform. As many of these rafts are prepared as may be necessary, they are rowed to their places in the line, and are placed in the same manner as the pontoon-bridge above described.

When the formation of a bridge extending over a river from one bank to another becomes impossible, numerous expedients are had recourse to for supporting troops; some by means of gunboats called flying or moving bridges. We learn from Arrian that the army of Alexander passed the Indus by means of boats and rafts of timber, the latter being supported on bags made of hides, and upon these the soldiers were placed with armor; in a similar manner the infancy of Hannibal is said by Livy to have crossed the Rhine. In India, at the present time, the passage of rivers is often effected by means of basket-boats, which are formed of split bamboo and covered with the bark; a vessel so made is said to be capable of containing about thirty men.

In 1811, Capt. Squires, of the Engineers, formed a bridge over the Gudiana by fixing treble-piers in the shallow parts of the river and mooring boat in the middle; thus just as the bridge was finished, the river swelled and carried away the treble bridges. The boats were then converted into flying bridges, to convey over the cavalry and artillery, and a slight narrow bridge was made for the conveyance of each pontoon and cask, the latter being taken from the neighbouring villages.

For many interesting particulars relating to the passage of rivers, see Sir Edward Dougal's Essay on Military Bridges, second edition.

PONTO/PHILUS, Dr. Leach's name for a genus of Shrimps (Eignon, Risso), named by ERI, born at Aarhus in Jutland, was the son of Louis Pontoppidan, a clergyman who wrote several ascetic works, besides a Theatrum Nobilissimae Daniae, in quo famiul illustrium herion, aliorumque genera at virtute excellere lorum genialogia, reussentur, 2 vols. fol. Eric studied at Fredericia, and afterwards at Copenhagen, where he took his degree in divinity. He was afterwards preceptor to several young noblemen, with whom he travelled; and subsequently he was appointed minister of the parish in the town of Bispebjerg in 1737. He was numbered among the king's chaplains. In 1758 he was appointed a chair of theology in the university of Copenhagen; and in 1747 he was made bishop of Bergen in Norway. He was the author of numerous works, and in Danish and Latin, upon historical, religious, and antiquarian subjects. The principal are:—1, Theatrum Danicium veterum et modernum, 4to, 1730, being a description of the geographical, natural history, and antiquities of the kingdom of Denmark. The author afterwards treated the same subject with much greater length in a work written in the Danish language. 2, Den Danke Atlas, in 7 thick 4to, 1758, being published in the author's lifetime, and which give a complete and elaborate topographical description of Denmark, accompanied by maps, views, and plans of the various towns, engraving of curious coins, inscriptions, monuments, tombs, and other remarkable objects, with an introduction to the history of the county, the genealogy of its kings, and other particulars relative to its history. 3, Gesta et Vestigia Danorum extram Daniam, 2 vols. 4to, 1749. In this work Pontoppidan gives an account of the old Danish race; its migrations to Britain, France, and other countries; the exploits of its warriors, &c. In his narrative the author is considered as having allowed himself to be carried by nature and by passion beyond the bounds of critical discrimination. 4, Annales Ecclesiæ Danicæ, 4 vols. 4to, a good history of the church of Denmark. 5, Marmora Danicae selectae, in fol., in which the author besides a number of inscriptions of considerable importance, entered into some critical observations concerning the occurrence of the kranek, and other fabulous monsters. 7, Memoriæ Hafniæ, a good description of the city of Copenhagen.

Livy, Origines Hafnienses, a history of the same city. The Pontoppidan is published in German and Icelandic, and is used in schools throughout all the Danish monarchy.
of the Romans. (Dio, xxxvii. 14; Appian, Mithr., c. 113.)

The greater part of the kingdom of Pontus was annexed to the Roman province of Bithynia, and the remainder was given to Deiotarius, tetrarch of Galatia. In the civil wars between Pompey and Caesar, Pharnaces attempted to obtain his hereditary dominions in Pontus, but he was defeated by Caesar, in B.C. 47, and murdered after his escape to the Bosporus. (Suet., Ces., c. 33; Plut., Ces., c. 59; Appian, Cis., iii. 22.) Pharnaces was made king of Pontus by Antony, in B.C. 39 (Appian, Civ., v. 73); but he was soon deposed, and Polemo appointed in his stead. (Dio, xlix. 25; Plut., Anton., c. 56.)

Polemo was killed at the battle of the Granicus, under Sertorius, and was succeeded by his widow Pythodoris. (Strabo, xii, p. 556.)

Pontus was reduced to the form of a province by Nero (54-68) and again by Domitian (81-96), when it was divided into the districts, called respectively Pontus Gallicus, Cappadocicus, and Polemisticus. In the time of Constantine another division of the province was made; the western part, which included Pontus Gallicus and Cappadocicus, being called Heracleontes after the town of Heraclea, and the eastern part preserving its name of Pontus Polemisticus.

The history of the kings of Pontus is given in an appendix to the third volume of Clinton's 'Fasti Hellenici,' from which the following extracts have been taken.

After leaving Colchis, the first town of importance on the coast is Trebizond (Trebizond), a colony of Sinope. (Xen., Anab., iv. 6, &c. 22.) We learn from Arrian (Periplus Pont., p. 116) that it became the seat of a small empire under Alexius, a despot of the Comneni (Gibbon's Decline and Fall, p. 61); and it retained its independence till the conquest of Constantine the Great (284). In the time of Arrian it was a small village, which was owing to the inhabitants having been removed to the modern town of Ferean. (Strabo, xii. 3, 2.)

West of Cerasus, on the coast, was Cotyora, an important town (Strabo, xii. 3, § 3-6.) In the time of Arrian it was a small village, which was owing to the inhabitants having been removed to the modern town of Ferean. (Strabo, xii. 3, 2.)

West of Cotyora and also on the coast near the river Thermus was Themisca, celebrated in antiquity as the habitation of the Amazons. Themisca is mentioned by Herodotus (iv. 86). It was besieged by Lucullus in the war with Mithridates, and offered a formidable resistance to the Romans. (Appian, Mithr., c. 78.)

The last town of importance on the coast was Amasia (Amasia), which, according to Theopompus and Strabo, xii. p. 547, was originally founded by the Milesians and subsequently received an Athenian colonv, and was called Pirus. It was greatly enlarged and beautified by Mithridates Eupator. (Strabo, xii. p. 547; Cic., Pro leg. Man., c. 6.) In the Mithridatic war it was given under its present name into the power of the Pontic armies. It was freed by Augustus from the tyranny of Straton, and in Strabo's time it was in a flourishing condition. (Strabo, p. 547.) Pliny (v. 2) calls it librum: whereupon it appears clearly that in his time it had the Jus Italicum.

The most important towns in the interior were Amasia, Comana, Zela, and Neocesarea. An account of Amasia, which was the birthplace of Strabo, contains under the name of the Amazons a significant reference to the city of the same name in Cappadocia, which was situated in the upper valley of the Iris. (Strabo, xii. p. 547.) It was a place of some mercantile importance, and was celebrated for its temple of the goddess Ma, who was supposed to answer to the Bellona of the Romans. There were 6000 slaves attached to the temple, the greater number of whom were courtresses. The office of high-priest was one of great honour and emolument. (Strabo, xii., p. 557-559.)

South-east of Comana was Zela (Zela), an antient temple, erected, according to Strabo (xii., p. 559), on the mound of the Semiramis, and celebrated for a image sacred to the goddess Anaitis. The priest of the temple was also sovereign of the town. Zela received an accession of territory from Pompey, and was made a city. (Strabo, xii. p. 560.)

Neocesarea is supposed to be the place of birth of Zela and Comana, on the Lycaon. It is not mentioned by Strabo, but was a considerable place in the time of Pliny, and is spoken of by Gregory Thaumaturgus as the most important town in Pontus.
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ber of the Society of Antiquaries, London, and of several other learned bodies. Besides his principal work he published another in two volumes, entitled "Viaggio fora di Ercolano," in which we meet with observations on some of the buildings in London.

PONZA, an island in the Mediterranean sea, off the coast of Naples, 20 miles south by west of Mount Vesuvius, and 36 miles north-west of Mount Etna. It is divided from one to two wide, and in shape like a crescent, the con
cave side of which faces the mainland of Italy. On the same side is the harbour, which is a natural basin with a narrow entrance, surrounded by high land, and perfectly safe in all weather. The island is one continuous rock, mostly barren, but affording some pasture for cattle. Round the harbour are ranged some buildings, consisting of a castle, which is used as a battery for the protection of the island, and a small garrison in it, and some other buildings, houses, and huts occupied by persons attached to the garrison and by fishermen. The Roman name of the island was Pontia. It was colonised by the Volsci from the opposite coast, and was the possession of the Romans. About four miles west of Ponza is the smaller island of Palmarola, or Palmaria, and two miles north-east of Ponza is an unin
habited rock called Zannone. About 24 miles south-east of Ponza, and halfway between Pisa and Lucca, is the island of Vandotene, the ancient Pandataria, which Julia the daughter of Augustus was banished by her father in consequence of her disolute conduct. Octavia the wife of Nerva was also banished to Pandataria, and on her death by order of her husband. Vandotene is about two miles long, and is inhabited by sailors and fishermen. East of Vando
tene, and separated from it by a narrow channel, is the small island of Pandora, known before the name of Stefano, the sudden and unexpected death of which group of islands is of volcanic formation.

(Fortis, *Osservazioni Litografiche sull'Isole di Vandotene e Ponza*, in the 3rd vol. of the Saggi Scientifici dell'Annotazione, 1754.)

POOLE, a corporate town on the coast of Dorsetshire, in 50° 47' N. lat., and 1° 58' W. long., 98 miles in a direct line south-west by west of St. Paul's, London, or about 116 miles by sea. Poole is situated on a small county

Rhein, and thence to Ringwood. The origin of Poole is unknown; it is supposed to have been an antient demesne of the crown granted to Longosepe, a natural son or descendant of Henry II. Longosepe gave a charter to the burgesses of Poole, the date of which is not ascertained. This charter was confirmed by William Monte
crude, Earl of Salisbury, 45 Edward III., and by subse
quent heirs or by the crown. In 1365 Poole was made a borough, the charter of Edward III. prevailing in this period it decayed, but in the reign of Henry VI. it re

tained. It is likely that its early prosperity depended upon the vigour with which the war in France was carried on. In 1375 the Poole borough was fortified, and the town was resorted to by Spanish merchants. In the civil war it had a garrison of parliamentarians, who were trou
blesome neighbours to the royalist detachments in the country. The town is upon a considerable inlet of the British Channel, which forms the harbour, and opens into the bay that lies between Hengistbury-head and Durlston-head. This inlet has a very narrow entrance which faces the east; it extends several miles inland, forming, when the tide is up, a large sheet of water, but presenting, when the tide is out, an assemblage of mud-banks divided by narrow channels. In the harbour are several islands, one of which, Brownsea, is used for grazing a square of several hundred acres, hand
some. It is large enough to support some good buildings on it. The town occupies a peninsula on the north side of the harbour, and consists of several streets irregularly laid out, the greatest part of which are named after Roman towns. The borough is co-extensive with the parish of St. James, and comprehends an area of 170 acres. The number of in
habited houses was, in 1831, 1315, besides 76 uninhabited and 600 other buildings. The number of families was 1426, of which 689 are in the corporation, and 737 are of one family, 5679 besides 1119 mariners employed in registered vessels belonging to the port. The town had in past some partly the corporate limits, and it may be calculated that its population in 1831 (exclusive of the mariners) was considerably above 7000, and has since then increased. A small suburb has grown up, separated from the town by an in
let of the harbour, over which there is a bridge. The houses in Poole are generally of respectable appearance, and some of them are of a superior class. The streets are paved; they are lighted and watched under a local Act. The guildhall was built in the middle of the last century, and there are a neat subscription and news room, and a building for the public library. The church of St. James has been rebuilt of Purbeck stone; and there are an Episcopal chapel and several dissenting meeting-houses. There are 20,000 miles of roads, and a 12-street street, in the borough, a custom-house, and an edifice of some antiquity, the king's hall or wool-house.

The trade which was formerly carried on with Barbados and the Bermudas, and of late years with Porto Bello, has considerably increased. The quays have been much en
larged and improved, and the harbour is one of the safest and best on the Channel coast. The number of vessels due to Poole, judging from foreign ports and number of masters, in 1832, and 1833, averaged for each year about 100 with cargoes, and 20 in ballast; the average number which cleared outwards for foreign ports was above 110 with cargoes, and 45 in ballast; the number of masters entered inward on the average of the same years was about 590 with cargoes, and nearly 350 in ballast; cleared outwards, nearly 1500 with cargoes, and 95 in ballast. The number of registered ves
sels belonging to the port in 1833 was 156. The clay found in the island of Poole is shipped here for the use of the potteries in Staffordshire or elsewhere; from 50,000 to 30,000 tons are shipped yearly. A considerable trade in corn is also carried on; and there are building-yards for vessels of all sizes, in which a great variety of work is executed, and an active fishing and other fishery carried on.

The corporation of Poole, under the Municipal Reform Act, consists of 6 aldermen and 18 councillors. As the town is a borough, the police and rate officers are elected by the burgesses. The borough had been much extended for parliamentary purposes, and the parliamentary limits have been adopted for municipal purposes until altered by parlia
dament. It is divided into two wards, one of which for the borough are held, and a weekly Court of Record, having unlimited jurisdiction in all cases, real, personal, or mixed. The sheriff holds a county court when necessary. Poole was incorporated by Royal Charter of 53 Henry VIII., and 42 Edward III.; it then discontinued sending them until 31 Henry VI., when the privilege was resumed, and it has been continued ever since. The number of voters regis
tered in the year 1833-36 was 496. The living of St. James at Poole is a perpetual curacy, of the clear yearly value of 307l., with a glebe-house; it is in the peculiar jurisdiction of Canford.

There were in the parish of St. James in 1833 twenty
nine infants in the day schools, with 455 children; an endowed free school with 22 boys; two Lancasterian schools, with 155 children; fourteen other day-schools, with 272 children; three boarding-schools, with 48 children; and five Sunday

schools, with 39. Of the three of the Sunday-schools have lending libraries attached.

POOLE, Matthew, a learned non-conforming divine of the English Church, author of the well-known and use
ful book "Synopsis Criticorum Bibliorum," which was

at York about the year 1624, and inherited from his family a good estate in that county. He was educated in Emmanuel College, Cambridge, but we have been unable to trace the circumstances of his history, till we find him in 1669, the possession of the church of St. Michael le Querne in London, which he resigned, being unable to comply with the terms of ministerial conformity imposed by the Act of Uniformity passed in that year. Previously however he had exerted himself for the elevation of persons intended for the ministry, which was liberally patronised, of which, in 1658, he printed an ac
count, in a book entitled "A Model for the maintaining of Students at the University, and principally in order to the Ministry." Being ejected from his eur, and prohibited from the ex
ercise of his ministry, he had leisure to devote himself to writing. He was the author of the greatest work which has been hitherto written so extensively known. The design was nothing less than to bring into one view whatever had been written by critics of all ages and nations on the books of Holy Scripture. This after ten years' labour, appeared in two volumes and 1669. These were followed by three other volumes, forming together five large folios, of which an extended edition was printed. The work was perhaps as good a work of a kind can be, and few will deny
that it is a very valuable and useful abridgment; but synopses and abridgments are rather for the multitude than for scholars, who are rarely satisfied with the opinions of any author which are thus presented to them at second-hand and without that fulness of illustration which the author himself had given; yet, being written in the Latin language, it is manifest that the compiler contemplated a work adapted to the knowledge of Biblical students who are not conversant with Hebrew. It may perhaps be said to be a convenient body of exegetical criticism for Biblical students who are placed in situations which cut them off from convenient access to large libraries.

Besides this, there is an English work by the same author. "Annotations on Scripture," which was left by him unfinished, but completed by several of his non-conforming brethren. This work appeared in two volumes, folio, 1640.

He was also engaged in most of the controversy of his time: he attacked Biddle on the Socinian question; he published a defence of the non-conforming clergy in 1662; he wrote against the intrusion of laymen into the ministerial office; and he was the author of "The Nullity of the Romish Faith," 1666, and of other treatises in the controversy with the Papists. He retired to Holland to find the toleration which was denied him at home, and died at Amsterdam in 1679.

POOLE'S HOLE. [DERBYSHIRE.]

POONAH, a city of Hindustan, in the presidency of Bombay, is situated on the left bank of the river Moula and Mouta. It is about 60 miles south-east from Bombay, direct distance; in 18° 30' N., lat. and 73° 32' E. longitude.

The city is on an extensive plain, or rather table-land, which is about 2000 feet above the level of the sea, and is bordered by hills which rise 1500 or 2000 feet above the plain itself. These hills are steep and rugged, and, previous to the conquest of the British forces in 1818, many of them were crowned by hill-treasures, which are now however nearly all destroyed or fallen into decay. There are a few gardens in the suburbs of the city, but as both the gardens and the city lie in a valley, the general appearance of the surrounding plain is naked and desolate.

Poonah was formerly the seat of the Mahratta sovereignty, and the residence of the Peishwa. It is not a handsome city, nor appears of large size, though its extent must be considerable, since its population in 1819 was estimated by Mr. Elphinstone at 115,000, and Bishop Heber in 1822 was informed that it then amounted to about 100,000. The city is walled, the houses are very irregularly built, and the streets are ill-paved and interspersed with peepul-trees. The bazaars are mean: there are many pagodas, but none of them either large or handsome.

The city is well watered, and had a handsome quadrangle surrounded by cloisters of carved wooden pillars, but the external appearance was not striking. When Bishop Heber was there in 1822 the ground-floor of the principal building was used as a prison, and the door immediately above as a dispensary; a large audience-chamber was fitted up as an infirmary for the natives, and a long gallery above this was converted into an hospital for the insane. A fire broke out in this palace in 1828, but we have not the means of ascertaining to what extent it was destroyed. Other small residences of the Peishwa were called "Monday's Palace," "Tuesday's Palace," &c. The most beautiful object is the temple of the goddess Parvati (Goddess of Love), situated on an isolated and rather lofty hill immediately over the town, and at the bottom of which is a large tank surrounded by gardens.

A school for the instruction of the indigent was founded at Poonah in 1819.

The British have a military cantonment a little to the west of Poonah, which is laid out in wide streets and well arranged. It is much resorted to by visitors from Bombay.

The territory conquered from the Mahrattas in 1818 has, with the exceptions mentioned in the article DECCAN, been divided into four collectorates, of which Poonah is one. Each collectorate is under the management of an officer with the title of collector. Generally a military man, but who also exercises the functions of a judge of circuit and magistrate; but there is a chief commissioner over all, who resides at Poonah.

For an account of the Mahratta war and of the successive Peishwas who resided at Poonah, see the article MAHRATTAS.

The cave-temple of Carlee, to which reference is made in the article AURANGZEB, is, in about a mile from Carlee, which is the last village on the great road across the Western Ghauts from Bombay to Poonah. The temple is hewn in the face of a rocky precipice, two-thirds of the side of which is occupied by the building. It is sixty feet above the plain, and is approached by a narrow pathway winding down the side of the hill among trees and bushwood and fragments of rock. Besides the principal temple, there are many smaller apses and galleries, in two stories, some of them beautifully ornamented. A narrative in the poems of Siva serves as a sort of gateway to the cave, and a small building stands on the right hand of its portico. The approach to the temple itself is under a noble arch built up with stone, and of portico supported by pillars, and with intercolumniations below and above. On the front of the portico, but a little to the left, is a high octagonal pillar, surmounted by three lions placed back to back. Within the portico, to the right and left, are three colossal sculptures of elephants, in alto-rilievo, with their heads, trunks, and fronds projecting boldly from the wall. On each of them is a driver, very well carved, and a palanquin, with two persons seated in it. The interior is hewn out of the solid rock, and the whole building leading to the temple is covered with alti-rilievi of male and female figures, somewhat larger than life. The temple itself is about sixty feet long by thirty wide, surrounded on each side by a portico of pillars, the capitals of which consist of a large cap like a bell, finely carved, and surmounted by two elephants with their trunks entwined, and each carrying two male and two female figures. The roof is decorated with ribs of timber, which are not for support, but for ornament, and the design has a fine effect in the perspective of the interior. There is no image of Buddha or any other idol in this temple.

(Herbert's Narrative of a Journey through the Upper Provinces of India in 1824 and 1825; Mrs. Pownall's Western India in 1838.)

POOR LAWS AND SETTLEMENT. A sketch of the early history of the English poor-law, down to the 43rd Eliz. c. 2, will sufficiently show the source of the present. The account is also there given of the great evils which ensued from the subsequent maladministration of the law, and finally created the necessity for the Poor-Law Amendment Act (4 & 5 Wm. IV. c. 76). It will be convenient to state how the law stood previously to the passing of this Act, and then to notice some of its leading provisions.

Every indigent person, whether a native or a foreigner, being in any district of the United Kingdom, who is not provided for by his family or his friends, or who cannot find any other subsistence, and who is raised for the maintenance of the poor, has a right to be supplied with the necessaries of life out of that fund. This right depends on statute, and principally on the 43 Eliz. c. 2, of which an act of 1751 has been a real and necessary modification. That act provided for four, three, or two substantial householders there, to be nominated yearly under the hands and seals of two or more justices of the peace, shall be called overseers of the poor. [Oxenfor]. Under this statute overseers could be appointed for parishes only. This proved very insufficient, because many large and populous districts were not situate within any parish, and consequently no overseers whatever could be appointed for them; and also because many parishes themselves were of such magnitude that one set of overseers could not properly attend to all the poor. To supply this defect, the 13 & 14 Car. II., c. 12, authorised the appointment of overseers in any township that was not a part of a parish, and provided that there should be a distinct set of officers for the management of its poor. Townships are sometimes created also by local acts.

It is the duty of these overseers to raise and administer the fund for the relief of the poor of their district. This fund, which is called the poor-rate, they are directed by the statute of Eliz. in parishes, and by the statute of Car. II. in townships, to collect in the shape of rates on every inhabitant, parson, vicar, and other, and every occupier of lands, houses, tithes, improper, propitiations of tithes, coal-mines or saleable underwoods in the said parish, in such competent sums and sums of money as shall think fit, &c. according to the respective capacity.

These provisions are still however, even since the 4 & 5 Wm. IV. c. 76, very inadequate. Overseers cannot be appointed, nor can a poor-rate be levied in any place that was
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not anciently either a parish or a township. Many districts are very populous at the present day form no part of any parish or township; and the poor of such districts, if unable to remove themselves to a parochial division of the country, where they will be entitled to relief, may, as far as the law is concerned, parish from want.

The rate may be made according to the exigencies of the place, which, whether parish or otherwise, is conveniently in either case called a rate, for any period not less than a year nor exceeding a year. The rate, which is made in writing, gives the names of the persons rated, a description of the property for which they are rated, and the amount; it contains also a declaration, signed by the parish officers, that the rate is, to the best of their belief, correct, and that they have used their best endeavours to make it so. The rate so made and signed is to be posted up in their several parishes, and it is called the allowance of the rate, and public notice of such allowance must be given on the Sunday following, or the rate will be entirely void.

As the statute expressly mentions both inhabitants and occupiers, inhabitants were held liable to be rated in proportion to their ability within the parish, although they had no property there which was capable of occupation, and occupiers of property therein were held liable although they resided elsewhere. Accordingly both real corporeal property and personal property within the parish may be assessed, as constituting 'the ability of the parish,' real corporeal property, as such, and the personal property, which the occupier resides, and personal property, if the owner is resident within the parish. Corporeal real property, since it is not the subject of occupation, seems not to be rateable unless incidentally, when, as in the cases of the personal property just stated, it is annexed and enhances the value of corporeal real property, which is the subject of occupation. As it is the occupier and not the owner of real corporeal property who is rated for it, it will be obvious that the term 'real property' is used in a restricted sense; it determines to a certain extent, and some deeper, the nature of the real estate, and excludes chattels real. The assessment is laid in respect of the revenue or annual profit of the property rated, whether real or personal. Such property therefore as is incapable of yielding profit is not rateable.

The assessment upon land and houses, &c. is calculated upon an estimate of their net annual value, which is defined to be the rent at which they would let from year to year, free of property therein and from taxes and the commutation rate charge, if any, and deducting the probable average of annual costs of repairs, insurance, and any other expenses which may be necessary to maintain the premises in a state to command rent. Personal property was not rated unless it had, as it were, a material existence; and therefore neither stock in the funds nor money was rateable. Furniture also was exempted, because it yielded no profit. In practice the only kind of personal property ever rated, and that in very few places, was stock in trade and ships. The rating of this species of property was attended with many disadvantages. The rate was to be made on the profit, which was defined to be not the whole profit, but the excess after payment of debts. Thus it was nearly impossible to ascertain the rateable amount of such property, and the proprietor might always evade the tax by residing out of the parish. So long however as personal property was rateable by law, the omission of a person from the ground of assessment is not to be rated equally according to their ability. The inconvenience of this state of things induced the legislature during the present session of parliament (1846) to enact (by § 3) that no inhabitant should be rated for his stock in trade or other property. The word 'inhabitant' may now be considered as struck out of the statute of Elizabeth; nobody will have to contribute henceforward to the poor, except in his character of occupier. Personal property therefore is not rateable.

It is unnecessary to make any detailed remarks on tithes and other property which, by the statute of Elizabeth, are expressly made rateable.

It is unnecessary to furnish a sufficient sum for the maintenance of its poor, any other parish in the same hundred, with the sanction of two justices, or in any other part of the county, with the sanction of the justices at quarter-seasions, may be called upon to assist the less solvent parish. This is called rating parishes in aid.

The overseers are to collect the rates from the persons rated. If a person rated does not pay when called upon, the overseers may obtain a summons from two justices, requiring him to show cause why a warrant should not issue to levy the rate by distress and sale of his goods; and, if on sufficient cause the justices make a warrant, it will be executed, the rate, and notice of appeal deprives the magistrates of their jurisdiction to disannul until the appeal is decided, unless the objection is solely on the ground of overcharge, in which case the appeal must be heard without delay. The property was rated at the last valid rate. The appeal against the rate on the ground of inequality, unfairness, or incorrectness in the valuation of the property rated may be to justices at petty-sessions, from whose decision a second appeal lies to the general quarter-sessions. The appeal, on the above grounds, may also be taken to the quarter-sessions in the first instance. If the objection be to the principle of the rate itself, or it is intended to dispute the liability of the property to be rated, the appeal lies to the quarter-sessions only. In all these cases of appeal, notice of appeal and of the precise objections to the rate must be given to the parish-officers, and also to any rated inhabitant.

The overseers, who in some parishes act under the direction of a parish officer, as in the case of the assistance given in sickness, the overseers are to apply the poor-rate to the relief of the poor of their parish. The poor of the parish are, in one sense, all those who happen to be in the parish at the time of their being in distress; for the parish in which they happen to be at any time is bound to receive and relieve them, and if they happen, for instance, where his ground of complaint is that they have been under-rated.

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Parish, may be continually shifting, the settlement conse-
quently shifting with it, until the last day of the service or of the apprentice's hire. But service or apprenticeship must be maintained by the parish in which they happen to be, as
casual poor, unless they were born in Scotland or Ireland,
or in the islands of Man, Jersey, or Guernsey, in which place
there is no need under any ordinance to pay them the
expenses of their own country. When a pauper has become
chargeable, and it is sought to remove him, he is taken be-
to two justices, who inquire as to his place of settlement,
and whether he is or is not chargeable. The examination and
other evidence as may be laid before them, and the decision
of the removal thither. The parish to which he is removed may
dispute its liability by appeal to the quarter-sessions, when
the order of removal will be quashed, unless it appears that
the order is justly made.

The Poor-Law Amendment Act (4 and 5 Wm. IV., c. 76)
has made no change in the law respecting the ratability of
property or the mode of collecting the rate. The Act does
not apply itself to the rate until collected; it then takes up
the rate for the purpose of securing a better distribution of
it. To this end the administration of relief to the poor
throughout England and Wales is subject to the control
of the commissioners. Their powers, and the new agency
established for the administration of relief under their
direction, have been already described. (Pauperism.)
In parishes or unions where there are guardians or a select
vestry, relief is to be given solely by such guardians or ves-
try, and not at the rate of the parish or union. In
these cases an overseer is bound to give temporary re-
lied on articles of absolute necessity, but not in money,
and, if he refuse, he may be required to do so by a magistrate's
order, which is valid for a
In parishes which have no guardians or select vestry, the
management and relief of the poor is still left to overseers,
subject to the control of the commissioners. But, with
the exceptions above stated, the task of relieving the poor is
wholly within, two or three overseers, or officers, free from
ignorance or corrupt motives, having been generally found in-
competent to the discharge of so important a duty.
They are still however entrusted with the making and collection
of assessments for the poor-rate, which they are to pay over to
have the distribution of it. The general discretionary power
which magistrates formerly exercised in ordering relief is
also withdrawn. But a single magistrate may still order
medical relief, when called for by sudden and dangerous
illness; and two magistrates may order relief to adult
persons, who from age or infirmity are unable to work, without
requiring them to reside in the workhouse. Relief to able-
worked persons can only be given out of the workhouse, unless
with the sanction of the commissioners. In substance the wants of
the poor are as amply supplied as before the Act, but the manner of administering relief is so regulated, by
subjecting the applicants for it to the discipline of a work-
house, and for these years, that the effect is that the public
living upon the parish fund, is depressed, in point of com-
fort, below that of the labourer. Thus a ready test is ap-
distinguished real and pretended destitution, and
a powerful incentive to work is held out to all who can find
employment.
The means also of obtaining employment are increased
by enlarging the market for the poor man's labour. This
is the result of a relaxation of law of settlement, and
particularly of settlement by hiring and service. The old
law had been found to obstruct the free circulation of labour
by confining the poor to their own parishes. The labourer
himself, from attachment to old scenes and associates, was
often unwilling to engage himself to any workhouse or
parish, lest, by acquiring a settlement there, he should in-
cur, at some future time, a permanent separation from
home: the farmer, on the other hand, had an equally strong
objection to hire a strange labourer on such terms as to
burden his parish with a new settler.
By the Poor-Law Amendment Act a settlement by hiring
and service cannot be acquired for the future; but the Act
does not interfere materially with settlements previously
acquired. Settlements by office appliance are not removed
by the sea service or to a fisherman can no longer be acquired.
Settlement by renting a tenement is clagged with the addi-
tional qualification that the occupier must have been assessed
as such in the last quarter-school, and not more than
five years after the purchase of the tenement or by
estate, like any other settlement, when once gained,
used to endure till it was superseded by some new settle-

P. C. No. 1153.
ment; but now it is converted to a temporary settlement, and to be retained so long only as the proprietor shall live within ten miles of the estate. Settlements by marriage and by payment of rates are untouched. Settlement by payment at birth is, to a certain extent, that illegitimate children born after the passing of the Act are to follow the settlement of their mother, until the age of sixteen, or until they acquire a settlement in their own right; instead of the monstrous "tying," the settling of the place of their birth. The effect of this change in the law is that an unmarried woman, whose pregnancy in itself made her chargeable, is no longer hunted from the parish in which she happens to be, in order that the parish might not be charged with its maintenance. The old law of settlement was full of legal difficulties and refinements, and the effect of the change in the law has been to relieve parishes from a frightful mass of correspondence.

A great change also has been introduced in the general law of bastardy. Formerly the putative father was liable for the support of a bastard, on the unsupported oath of the mother that he was the father of it. Before the birth of the child, he might be called upon to give security to provide for the child, and, if unable to give such security, might be committed to prison; and, after its birth, an order of filiation might be made upon him by two justices out of session, and in either case neither the putative father nor the putative mother of a bastard can be punished, as was formerly the case. Female incontinence is checked by making the mother liable to maintain her child in the first instance. The putative father is required to be only in the event of her inability to do so to provide for the child, and to make quarterly payments, and the evidence of the mother must be corroborated in some material particular. By a still more recent Act the order is to be made at petty-sessions, unless the putative father desires that the case may be heard at the quarter-sessions, and give security to abate by the judgment of that court.

Any person who marries a woman having children, whose bastardy is not illegitimate, is liable to maintain them until they attain the age of sixteen, or until the death of the mother.

The compulsory provision for the poor, which has been introduced into Ireland, by 1 and 2 Vict., c. 36, has already noticed. (Pauperism.)

A compulsory provision for the poor has been in force for about two centuries in Scotland. The Scotch law resembles in many respects the English law, but has been more widely extended. In Scotland, the able-bodied have no legal right to relief. (Moneypenny on the 'Scotch Poor-Law; 'Edin. Rev., vol. lix., p. 425.)

The 'Essay on Criticism,' worth notice, as, combined with Pope's Pastorals, was the chief annual production of his time. The influence was most predominant in forming the prevailing style of versification in his time. That any man possessed of any measure of poetical spirit should be so treblyingly alive to what others said of him, as in his second work to employ himself in canvassing the merits of critics and the rules of criticism, is certainly not what we might expect. He who has given birth to a high production of the imagination cannot help feeling that its merit rests upon other foundations than his own. The man who could not remain satisfied in the pleasure which the exercise of any noble faculty always gives, without troubling himself to inquire what the critics have said upon it, or what is the general verdict of his readers. At the time when Pope wrote 'The Rape of the Lock,' his reputation was reduced to an end in view was to please the readers: the readers themselves were almost entirely of one and that a limited class; the class who read were members of the fashionable world, and frequented coffee-houses, the clubs of those days. Among the coffee-houses some one presided; and hence by getting the ear of this president, or what was better, by taking his place, an author became in great measure the judge of his own work. Dryden's literary supremacy could never recur among us, for it required a classified class, and a very peculiar state of society to secure so general a reputation. However Dryden obtained it, and, by doing so, set the fashion. The book-sellers favoured it, for nothing could be so convenient for the book-sellers as to have the whole body of literature; and the effect of all this was to make Pope an imitator of Dryden, and all the other poets of the day imitators of Pope, as the person whose style was the most approved by those whom Addison and Pope had contemporaneously called the town, the only literary discussion was who should, if we were to give a reason for the predominant influence possessed by the town in Pope's days, an influence which continued till the French revolution, we should ascribe it to that revolution in favour of the then unwashable Restoration, and which the unpopular James II was unable to destroy, joined to the influence which French manners and modes of thought had acquired to the prejudice of the English spirit of the early part of the seventeenth century.

A full account of the bargain with Lord L. the price of the work, &c., are given in Johnson's 'Life of Pope.'
The preface which Pope prefixed to his works is quite as remarkable as the 'Essay on Criticism,' in assuming, as it does from beginning to end, that the proper object of a writer is to please. It is curiously also, as a memorial of that fashion which poets used to profit by dedicating their work to some great person, and in receiving presents, compliments, titles; all which follow Pope ridicules, though at the same time he is governed by the spirit which dictated them, and boasts that he had been "encouraged by the great, commended by the eminent, and favoured by the public in general."

Translations and imitations are an important part of Pope's works. Of these the most remarkable are the versions of Tacitus, Martial, Juvenal, and Horace. Pope's version of Juvenal was received with universal applause. The poet, which the "Dunciad" called "the only work of considerable repetition and written with great discrimination," is entitled "Bibliothèque Sacrée, ou Dictionnaire Universel, Historique, Dogmatique, Canonique, Géographique, et Chronologique des Sciences Ecclesiastiques," par les Réfrérends Péres Richard et Giraud, Romains, vols. 1-9, 1709-1720.

In his imitations of Horace, Pope has been most happy: indeed, whom the parties have so much in common, it was to be expected that the imitator would be successful. Dazzling point and harmonious verse are combined in these delightful compositions, which are worthy of all praise. Indeed these are the characteristics which have given Pope his popularity. But they do not constitute poetry, nor is the man who possesses them only therefore "worthy of consideration." To Pope they were "doubtless temptations too strong to be resisted. He who could write so well in the fashion was not likely to sacrifice fame by writing better against the fashion."

The poem remains unnoticed, 'The Dunciad,' in which we may trace Pope's chief excellencies, and the subject being one to which his manner is peculiarly adapted, the poem on the whole appears to be the most perfect of his compositions. In 'The Dunciad' we may discover Pope's true merit—that of having been the first to wage successful war against that crowd of verbal critics and worthless rhetoriers which overran literature. The manner in which he holds up to ridicule the poets, booksellers, and critics of the time is admirable, and the number of lines of 'The Dunciad,' which are in constant use as quotations, are the best proof how striking the satire must be. Theobald was the first hero of 'The Dunciad,' and owed his exaltation to having attacked his vast volumes in Pope's edition of Shakspere. He was succeeded in a subsequent issue by Colley Cibber, who stands as such in the present poem.

An excellent parallel has been drawn by Dr. Johnson between Dryden and Pope. It is perhaps too favourable to the latter, but shows a clear insight into the merits and faults of both. We cannot speak so favourably of the defence of Pope's 'Iliad.' To imply, as Dr. Johnson does, that the advance of civilization required the additions made to the Old Testament, shows not only a disregard of the true principles of the art. Indeed it is hard to point out a good work of the kind from the time of Dryden downwards, with the exception of Dryden's Virgil, until we come to Cibber's translation of 'All's Well That Ends Well.' On our own day, Dr. Johnson's own translations of Juvenal and Pope's of Horace only excepted. It thus appears that the Latin was the only tongue which met with successful translators from Dryden to Coleridge; Dryden's own style, and the character of the times, having joined to give all verse a Virgilian or Ovidian character. It only remains to state that as a prose writer Pope is considered to have "very little merit. His style is elegant and cautiously correct, much more correct and much less attractive than Dryden's. Pope's Works, with his last corrections, and notes and a commentary by Warburton, were published in 1757-1760, London, 8 vols. There is a modern edition by Roscoe, London, 10 vols. 8vo.

(Johnson's Lives of the Poets; Wortham's 'Supplement to the Preface to his Poems.')

POPE (Pope), the title assumed by the bishop of Rome as head of the Roman Catholic Church. The word, papa, or papa, meaning 'father,' is used by the Greeks to denote a presbyter. In the early ages of the church it was given to the bishops in general. (Ducange, "Glossarium"; Mornet, "Dictionnaire Historique," vol. VII., in a council held at Rome, A.D. 1076, decreed that the title Pope should be given only to the bishop of Rome, as a mark of superior respect. There are three offices or dignities united in the person of the Roman pontiff. He is—1, the primacy of the Roman Catholic world; 2, he is bishop of Rome and metropolitan of its province; 3, he is the temporal sovereign of the Papal State. His authority and the manner in which the last-mentioned capacity is described under PAPAL STATE. Considered as pontiff and primate of the Roman Catholic church, the pope has a very extensive spiritual authority both ecclesiastical and civil. There is no one to whom the church, as a community, can be appealed in any manner of things. The limits of this authority are however variously defined even by Roman Catholic theologians. We cannot do better than quote on this subject the definition given in a recent work of considerable reputation and written with little discrimination, that is entitled 'Bibliothèque Sacrée, ou Dictionnaire Universel, Historique, Dogmatique, Canonique, Géographique, et Chronologique des Sciences Ecclesiastiques,' by the Réfrérends Péres Richard et Giraud, Romains, vols. 1-9, Paris, 1762.

Under the head 'Pape,' section iii., 'De la Puissance et Autorité du Pape, we read as follows:—1. All Catholics acknowledge that the pope holds by divine right a primacy of honour, of precedence, and of authority and canonical jurisdiction in the whole church, because he is the successor of St. Peter, to whom Jesus Christ granted those privileges. (Matthew, v. 17.) But is the pope infallible in his decisions concerning law or discipline? Is he above the general council? Has he any power, direct or indirect, over sovereigns and kingdoms? Divines are very much divided in opinion upon these questions.

2. We may call the pope either as a private and individual doctor of the law, or as the sovereign pontiff speaking ex cathedra in his quality of head of the universal church, to which church he proposes something to be believed as an article of divine faith, under pain of heresy, and this he does after having prayed, having consulted the sacred college of cardinals, and employed the other customary means in order to ascertain the truth. Now the French theologians in general, agreeably to the fourth proposition of the Gallican church, maintain, that even in this case, when he speaks ex cathedra, the pope is not infallible, and that his decisions become infallible only after they have been accepted by the church, either in council or assembled concord, the general conciliar of the church, as the Latin church, in its various congregations, throughout the world. The Italian divines, on the contrary, commonly assert that the pope is infallible when he speaks ex cathedra, independently of the consent of the church. They ground their assertion on the passage in St. Matthew: 'There shall be no one to judge the house of Israel, but the house of Israel shall judge the house of Israel.' (Matthew, v. 17.) How, said they, can the church be infallible, if the foundation upon which it is built be not infallible? Does the church rest upon Peter, or Peter upon the church? To this their reply only is, the church is built upon Peter, and the church is built means faith, and not the person of Peter; 2, that the promise of infallibility was made to the whole church, and not to Peter individually; 3, that all other passages which are quoted from the Scriptures or the Fathers are only by way of a caution to the individual to who is seated on the chair of Peter, but to the

* See the Preface to Hooke's "Tavo/' for the contempt in which old transla-
chair itself, to the see of Rome, the Roman church, the whole succession of the Roman pontiffs, the universal church in short.' The writer of the 'Bibliothèque Sacrée' winds up these conflicting statements by saying; 'This question, however, will object, that the question is considered as one of faith at Rome, for as the Roman (or, as the French call them, the ultramontane) canons insist the infallibility of the pope by some right, a different plan of approving or confuting, reforming or abrogating their decisions. Those divines, on the contrary, who maintain that the pope is not infallible, maintain also that he is subject to the general councils both as to faith and discipline. This is the opinion of the French clergy, embodied in the second of the four propositions of the Gallican church, promulgated in 1682, which 'approves the decision of the council of Constance, declaring the council to be the superior of all the councils in spiritual matters.' The asserters of this proposition say that 'the pope is the head of the faithful nearly in the same manner as the general of a monastic order is the head of all the members of that order, to whom however he is subject when they agree among themselves.' It may and shall be observed, that besides the council of Constance, which decided this question of the superiority of the general councils over the pope, there is the council of Basle, which asserted the same principle, and that the council of Basle is reckoned by the French theologians among the legit- mate councils of the church, but is not so reckoned by the canons of Rome. [Pragmatic Sanction.]

In his quality of bishop of Rome, the pope delegates his authority as ordinary to a prelate called Vice-Gerente, who is generally a bishop in partibus. In his quality of metropolitan of the provinces of Rome, he has under him the bishops called his suffragans. It may be observed, that the bishop of Rufsia, of Sabina, of Frascati, of Albano, and of Palestrina, as prime of the Roman Catholic church, he has under him the following sees:—In the Papal State, 8 archbishops and 59 bishops; in Tuscany, 3 archbishops and 17 bishops; in the kingdom of the Two Sicilies, 33 archbishops and 77 bishops; in the Sardinian monarchy, 7 archbishops and 34 bishops; in the duchy of Parma, 4 bishops; in the duchy of Modena, 2 bishops; in Tavarnelle, 1 bishop; in the Austrian empire, 13 archbishops and 71 bishops; in the rest of Germany, 5 archbishops and 20 bishops; in Switzerland, 4 bishops; in Belgium, 1 archbishop and 5 bishops; in France, 14 archbishops and 66 bishops; in Spain, 6 archbishops and 49 bishops; in Portugal, 3 archbishops and 14 bishops; in Russian Poland, 5 archbishops and 13 bishops, of whom 2 archbishops and 3 bishops belong to the united Greek church; in Ireland, 4 archbishops and 23 bishops; in the states of Spanish America, 6 archbishops and 3 bishops; in Brazil, 1 archbishop and 10 bishops; in the Spanish colonies, 1 archbishop and 7 bishops; in the Portuguese colonies, 2 archbishops and 10 bishops; in the Portuguese Empire, 1 archbishop, 9 bishops, and 1 vicar apostolic; in Latin America, 1 archbishop, lately appointed; in Canada, 2 bishops; in the other English colonies and dependencies, 2 archbishops and 2 bishops; in the United States, 1 archbishop and 11 bishops. (Servitori, Statisticæ Italice.) There are besides these, at least 50 archbishops, and 1000 bishops, in the countries of Barbary, &c. In England and other Protestant countries the vicars apostolic exercise the episcopal functions over that part of the community which follows the Roman Catholic faith. The total number of people who profess the Roman Catholic religion in Europe is roughly calculated at about 112 millions, or about one half of the population of Europe. The countries of which the population is exclusively Roman Catholic, are Italy, the Austrian Empire, Conclave, and the kingdom of Belgium. In America, the Spanish and Portuguese states are also exclusively Catholic. Roman Catholic congregations are scattered about various countries of Asia, but in small numbers. For the manner in which the pope carries on the spiritual government of this extensive flocks see CATHOLIC CHURCH and CONCORDAT. The form of election of the pope is given under CONCLAVE. For the history of the popes see their biographies. Their pontificates are generally condemned by the Protestants. For their dogmatic views see VIE et Vie retrospective des pontifes Romains, ut pro initio nos, centes Eclesiae usque ad Urbanum VII., by Cacionio, Capo, and Vittorelo, fol., Rome, 1630. The chronology of the earlier popes is often obscure, and the dates are uncertain. The following table is chiefly
bounced on Petrus's 'Rationarium Temporum.' According to the chronology of the Roman Church, the apostle St. Peter was the first bishop of Rome, and suffered martyrdom, A.D. 57. He is said to have entrusted in his lifetime the see of Rome to Linus, a native of Etruria, who died in the year 68. Linus was succeeded by Clemens Romanus, who died about A.D. 100. Some chronologists place Anacletus or Cletus between Linus and Clemens, whilst others place him after Clemens. [Clemens was a native of Palestine, is recorded as bishop of Rome about the year 100, and was succeeded by Alexander I. about 109. Alexander I. was succeeded by Sixtus I., a Roman, in 119. Sixtus was succeeded, in 127, by Telephorus, a Greek, who is said by Irenæus to have suffered martyrdom about the year 138. Hyginus, a native of Athens, succeeded Telephorus, and was succeeded, in 142, by Pius I., a native of Aquileia. Pius was succeeded, in 151, by Anicetus, a native of Syria. Anicetus was succeeded, in 161, by Soterus, who was succeeded, in 170, by Eleutherus, in whose time Irenæus visited Rome. Eleutherus was succeeded, in 183, by Victor I., a native of Africa. To Victor succeeded Zephyrinus, A.D. 197. Zephyrinus was succeeded, in 217, by Callistus or Calixtus I., who governed the see of Rome through a period of comparative tranquillity under the tolerant reign of Alexander Severus. Calixtus was succeeded, in 222, by Urban I. Pontianus succeeded Urban in 230, and died in exile. He was succeeded by Anicetus, a native of Athens, who a few months after his election suffered martyrdom, during the persecution of the Christians by Maximinus. He was succeeded by Fabianus, A.D. 236. Fabianus was succeeded, in 252, by Cornelius, whose VI. successor Novatus, a Roman presbyter, who is the first antipope recorded in history. Cornelius was succeeded, in 253, by Lucius I. To Lucius succeeded Stephen I., in the same year. Stephen had a warm controversy with Cyriac, bishop of Carthage. Stephen was succeeded by Sixtus II., in 257. Sixtus was succeeded by Dionysius, A.D. 259. It was under Dionysius that the heresy of Paul of Samosata broke out. Dionysius was succeeded by Felix I. in the year 270. Eutychianus succeeded Felix I. in 272. Stephen II. succeeded, in 283, by Calixtus, who is said to have been a relative of the emperor Diocletian. Calixtus was succeeded, in 296, by Marcellinus. Marcellinus died A.D. 305, and after a vacancy of three years Marcellus was elected in 308. Euselius succeeded Marcellus in 310, who was succeeded in the same year by Melchiades, in whose time Constantine defeated Maxentius and took possession of Rome. Melchiades was succeeded, in 314, by Sylvester I., during whose pontificate Constantine convoked the great council of Nicaea, to which Sylvester sent two priests as his legates. In that council it was decreed that the bishop of Rome should be primate over the churches of those provinces which in civil matters were subject to the jurisdiction of the 'vicarius Urbis,' or imperial vicar of Rome.

Date of election. A.D.

336. Marcus, a native of Rome, succeeded Sylvester I.
337. Julius I., a native of Rome.
338. Liberius, a Roman, succeeded by Constantius. Felix, substituted by Constantius, is considered by most as an intruder.
366. Damasus I., a Spaniard, elected after the death of Liberius.

Ursicinus, antipope against Damasus.
384. Sticcius, a Roman, succeeded Damasus.
388. Anastasius I., a Roman.
401. Innocent I., a native of Albano.
417. Zosimus, a Greek.
418. Boniface I., a Roman.
420. Celestinus I., a Roman.
432. Sixtus III., a Roman.
440. Leo I. of Rome, called the Great.
461. Hilarius, a native of Sardinia.
470. Simplicius, a native of Thrace.
483. Felix III. of Rome.
492. Gelasius I. of Rome.
496. Anastasius II. of Rome.
498. Symmachus, a native of Sardinia.
514. Hormisdas, a native of Frusino.
523. John I., a Tuscan.
526. Felix IV., a native of Beneventum.
530. Boniface II. of Rome.
532. John II. of Rome.
POPL 406

A.D. He was the first who changed his name on his assumption.

963. Leo VI., styled antipope by some

964. Benedict V., a Roman.

965. John XIII., a Roman.

972. Benedict VI., was killed in the tumult of Crescentius.

973. Benedict II., a Roman.

974. Benedict VII., of the Conti family.

983. John XIV., put to death by Cardinal Franco.

984. Franco, antipope, by the name of Boniface VIII.

985. John XV., a Roman, died in a few months.

996. John XVI., a Roman.

996. Gregory V., a German: Crescentius put to death by

Odo III.

999. Sylvester II., Gerbert, native of Auvergne.

1003. John XVII., a Roman.

1009. Sergius IV., a Roman.

1012. Benedict VIII. of Tusculum, of the Conti family,

1024. John IX. of Rome, brother of the preceding.

1033. Benedict IX., nephew of the preceding, deposed.

Antipope, Sylvester, bishop of Sabina.

1044. Gregory VI. of Rome, abdicated.

1047. Clement II. of Saxony (bishop of Bamberg).

1048. Damasus II. (Poppo, bishop of Brixen).

1049. Gregory II., abbot of Toul. Final separation of the

Greek church.


1057. Stephen IX. Frederick, abbot of Monte Casino.


1069. Nicholas II. of Burgundy.

1061. Alexander II. of Milan.

1073. Gregory VII., Hildebrand, a monk of Soana in

Tuscany. Guibert, antipope, assumed the name of Clement III.

1086. Victor III., a native of Beneventum.

1088. Urban II., a native of France.

1089. Paschal II., a native of Tuscany.

Antipopes, Albert and Theodoric.

1118. Gelasius II., a native of Caeita.

1120. Calixtus II., a native of Burgundy.


1130. Innocent II., a Roman.

1134. Anacletus, antipope.

1143. Celestine II., a Tuscan.

1148. Lucius II. of Bologna.

1154. Eugenius III. of Pisa.

1153. Anastasius IV., a Roman.

1164. Adrian IV., Nicholas Breakspear, an Englishman.

1169. Alexander III. Cardinal Orlando Bandinelli of Siena.

1171. Cardinal Octavian, antipope, by the name of Victor.

1172. Cardinal Guido, antipope, by the name of Paschal.

1178. Calixtus, antipope.

1181. Lucius II., Cardinal Ubaldino of Lucca.


1189. Poppo, bishop of Beneventum, died in two months.


1197. Celestine III., Cardinal Hiscinthus, a Roman.

1198. Innocent III., Cardinal Lotarius of Signia.


1227. Gregory IX., Cardinal Hugo of Anagni.

1241. Celestine IV. of Milan, died in a few days.


1243. Alexander IV., Cardinal Rinaldo Conti of Anagni.

1261. Urban IV., James, patriarch of Jerusalem, a Sveve-

man.

1265. Clement IV., Guy of St. Gilles in Languedoc.

1272. Gregory IX., Tebaldo Visconti of Fiescena.

1276. Innocent V., Cardinal Peter, a native of Turin.

1276. Adrian V., Otto Bonino Fieschi of Genoa, died in a

month.

1279. John XXII. of Liobon.


1281. Martin IV., Cardinal Simon de Brie, a Frenchman.


1294. Celestine V., Pietro da Morrone of Abruzzo, abd-

icated.


1303. Benedict XI., Cardinal Nicholas of Trisso.

1365. Clement V., Bertrand of Bordeaux, removed the

Sees to Avignon.

1376. John XXII., James of Cahors in France.

A.D. Nicholas, antipope, in Italy.

1334. Benedict XII., James Fournier, a Frenchman.

1342. Clement VI., Peter Roger of Limoges in France.

1392. Innocent VI., Stephen Aubert of Limoges.

1392. Urban V., William Grimard, a Frenchman.

1370. Gregory XI., Peter Roger, a Frenchman, restored

the Papacy to Rome.

1378. Urban VI., Bartolommeo Pignano, a Neapolitan.

Antipope, Clement, at Avignon.

1398. Boniface IX., Peter Tomacelli of Naples.

Antipope, Pedro de Luna, a Spaniard. [Benedict, VII.,

Antipope.]

1404. Innocent VII., Cosmo Migliorati of Sulmona.

1406. Gregory XII., Angelo Corrasi of Venice, abdicated.

at Constance.

1409. Alexander V., Peter Philargius of Cambria.

1410. John XXIII., Cardinal Cossa, deposed by the Council

of Constance.

1417. Martin V., Otho Colonna, a Roman.

1431. Eugenius IV., Giovanni Condulmiero, a Venetian.

Schism between the Pope and the Council of Basle. Felix, antipope. [Amedius VIII.]

1432. Adrian VI. of Utrecht, preceptor of Charles V.

1453. Clement VII., Giulio de' Medici, nephew of Lorenzo.

1454. Paul III., Alessandro Farnese of Rome: convoked

the Council of Conradi.

1520. Julius III., Giovan Maria Gioce of Rome.

1520. Marcellus II., Cardinal Cervini of Montepulciano,

died in a month.

1554. Paul IV., Guglielmo Caraffa, a Neapolitan.

1592. Pius IV., Giovanni Angelo Medicini of Milan

closed Council of Trent.

1666. Pius V., Michele Ghislieri of Alessandria in Pied-

mont.


1665. Sixtus V., Felice Peretti of Montalto in the March

of Ancona.

1759. Urban VII., Gian Battista Castagna, a Genoese, died

in a month.

1900. Gregory XIV., Nicola Sforzato of Milan.

1910. Innocent IX., Gian Antonio Peschetti of Bologna.

1912. Clement VIII., Ippolito Aldobrandini, a native of

Fabro.

1915. Leo XII., Alessandro de' Medici of Florence, died in a

month.


1908. Gregory XV., Alessandro Ludovici of Bologna.

1907. Urban VIII., Maffeo Barberini, a Florentine.

1944. Innocent X., Gian Battista Pamphili of Rome.

1596. Alexander VII., Fabio Chigi of Siena.

1667. Clement IX., Giulio Rospigliosi of Pistoia.

1670. Clement X., Emilio Altieri of Rome.

1687. Clement XI., Benedetto Odescalchi of Como.


1907. Innocent XII., Antonio Pignatelli of Naples.

1700. Clement XI., Gian Francesco Albani of Urbino.

1724. Benedict XIII., Michel Angelo Conti of Rome.

1724. Benedict XIII., Vincenzo Maria Orsini of Rome.

1730. Clement XII., Lorenzo Corsini of Florence.

1740. Benedict XIV., Prospero Lambertini of Bologna.

1746. Clement XIII., Carlo Rezzonico of Venice.

1769. Clement XIV., Gian Vincenzo Ganganelli, born near

Rimini.

1775. Pius VI., Angelo Braschi of Cesena.

1800. Pius VII., Gregorio Barnaba Chiaramonti of Cesena.

1802. Leo XII., Fabio Carafa della Genga, native of Romagna.

1829. Pius VIII., Cardinal Castriglione of Cingoli.

1831. Gregory XVI., Mauro Capellari, born at Belluno.

POPEY is a word often used in England in an invidi-

ous sense to denote the Roman Catholic religion in general,

but more particularly those tenets of the Roman church.
which are most obnoxious to those who dissent from it, such as its avowed exclusiveness, its intolerance, which is founded on the belief that out of its pale there can be no salvation, and above all to modern politicians: individuals: or nations which have reached the highest degree of civilization hitherto known, the population is as great to one square mile.

Under all the diversity of circumstances in which the inhabitants of different parts of the world exist, their numbers are limited: labour and subsistence: or nations which have reached the highest degree of civilization hitherto known, the population is as great to one square mile.

In an encyclical letter of the present pope, dated 15th April 1853, and addressed to monks, nuns, abbots, and bishops, the principle of allowing liberty of conscience to the people is censured as absurd, erroneous, and delirious, derived from the corrupt source of indifferenceism. For the benefit of the Church, the pope had in the following with the declaration that La Mennais in the following:

September dissolved the society which he had established: ‘for advocating religious liberty.’ (Affaires de Rome, part I, from the language of Leech, 1836, with copy of the ‘Encyclical Letter,’ and other documents.)

POPERINGE is a flourishing town in the province of West Flanders, in the kingdom of Belgium, twenty-six miles south west by south of Ostend, situated on a canal called the Schipvaert, and has 10,000 inhabitants. The churches, of which there are seven, viz. two parish churches and five belonging to the convents, are well-built edifices. The inhabitants have considerable manufactures of coarse woollens and other English and Scotch fabrics and especially in hops, which are very extensively cultivated in the neighboring country, and are of very superior quality, being preferred even to those of Alost. (Stein; Hassel.)

POPULATION, the number of people in any country or division of a country, or in a city or town.

The circumstances which determine the proportion of the population to the area of any given country, or the first elements which we must take into the account in considering their social condition. In the lowest stage of human existence, that in which men depend on hunting and fishing for a subsistence, they are scattered over an immense surface in order to find the few animals which they pursue become scarce in one part, they remove to another. Though the numbers of a tribe may not average one individual to a square mile, the difficulties of procuring subsistence are often so great, that frequent hunger and occasional famines have always characterized the savage state. Many of the tribes of North America which live near and among the Rocky Mountains are actual examples of this precarious mode of existence; and the white men who hunt the fur-bearing animals in the same regions are subjected to these inconveniences of a savage life. The purely pastoral state admits of a greater relative proportion of population; but the necessity of frequent removal, the necessity of building his own house, the necessity of the carrying provisions, the men of this proportion surpassing a certain limit, which is determined by the capabilities of the uncultivated land to feed their flocks and herds. If agriculture be resorted to, and the occupation of the shepherd be exchanged for that of husbandman, the numbers of the population will increase with their flocks will sustain a much larger population. In the early stages of agriculture, the implements of labour are few and imperfect; the clothing of each family is the produce of household industry; and only a limited number of non-agriculturists is needed to satisfy the demands of the community. When a more minute division of employment takes place; and the husbandman is closely engaged in raising food, while others are employed in making clothing during spring and summer, all the other wants of the population, the labour of the community becomes much more productive, and food being consequently raised in greater quantities, this change is followed by an increase of the population; and when machines for abridging human labour are introduced, a further stimulus is given to the increase of population. An intelligent, healthy, and industrious population, who possess a good soil and abundance of minerals, who own a country is a vast and powerful mechanic and labour-saving contrivances, not only to supply their own wants, but those of other countries in a less advanced state. When a country has succeeded in introducing the products of an extensive division of labour, and adapting these to the wants of man; that enjoys a far larger amount of commerce than it could command if its foreign trade were determined by the mere extent of its territory, instead of the industry, enterprise, and intelligence of its inhabitants operating on its natural resources, the population may be increased almost indefinitely, with a continual increase in the comforts which it enjoys. In the savage state, a tract of several hundred square miles is overstocked by as many inhabitants as the richest state in Europe. In a state which has reached the highest degree of civilization hitherto known, the population is as great to one square mile.

The evils which arise when the population increases more rapidly than the means of subsistence had not escaped the notice of two of the most eminent writers of antiquity Plato and Aristotle. (Plato, Laws, and Aristotle, Politik, vii, 16.) In later times, this truth had been seen by Mr. Franklin, Sir James Stewart (Treatise on Pol. Econ., book 1), Mr. Townsend (Essay on the Poor-Land, and on the Means, several proposals which have been experienced, have contributed to enlighten the public mind; and the writings of the late Mr. Malthus have powerfully aided in producing correct views upon the questions of population.

Mr. Malthus's Essay on the principle of population was published anonymously in 1798. This work was suggested by a paper in Godwin's 'Inquirers,' and the author's object was to apply the principle of population in the consideration of the schemes of human perfection, and other speculations on society to which the French revolution had given birth. Hume (Populosity of Ancient Nations, Wallace (Dissertation on the Numbers of Mankind in Antiquity and Modern Times), and Dr. Price's writings of more recent date, were the authors from whom Mr. Malthus deduced the main principles of his Essay. In 1803 appeared a second edition, to which Mr. Malthus prefixed his name, and which might almost be considered as a new work. The author had in the interval written a history of the progress of the human mind, and had at last ventured to publish his Essay on the principle of population in the past and present state of society, and the subject was for the first time treated in a comprehensive and systematic manner. A third, fourth, and fifth edition appeared in the years 1813, 1817, and 1818. The fifth edition, which contained several additional chapters, was published in 1817. The sixth and seventh editions, which contained fewer alterations, was published in 1826. The title of the work at its present state is as follows:—An Essay on the Principle of Population, or a view of its past and present effects on Human Happiness, with an inquiry into our prospects respecting the future removal or mitigation of the evils which it occasions. The following is a brief summary of the chief propositions of Mr. Malthus's Essay:—that population, uncontrolled, goes on doubling itself every twenty-five years, or increases in a geometrical ratio; while the means of subsistence, under the most favourable circumstances, can only increase in an arithmetic ratio. That is, the human species may increase as the numbers 1, 2, 4, 8, 16, 32; while the increase of food would only proceed in the following ratios, 1, 2, 3, 4, 5, 6. Thus if all the fertile land was brought into cultivation, it would be necessary to depend upon improved means of cultivation; and neither science nor capital applied to land could create an increased amount of produce beyond a certain limit. But the increase of population would everywhere overtake the increase of food; it could not be obtained, and a population of twenty millions would possess as much the inherent power of doubling itself as a population of twenty thousand. Population however cannot increase beyond the lowest nourishment capable of supporting life; and therefore the difficulty of obtaining...
food forms the primary check on the increase of population, although it does not usually present itself as the immediate check, but operates upon mankind in a variety of ways, not directly manifest to the view of ordinary inquiry. The immediate check may be either preventive or positive; the former being such as reason and reflection impose, and the latter consisting of every form by which vice and misery shorten human life. There is a sort of natural instinct in human nature, which directs him to an early attachment for one woman, from the fear of being unable to preserve his children from poverty, or of not having it in his power to bestow upon them the same protection and security which he himself had himself enjoyed. Such a restraint may be practised for a temporary period or for the whole of a man's life, and it is deducted from the sum of human happiness. It is not to be compared in extent with that which results from the positive checks to population, and it is not a sufficient instrument to prevent the fall of the human race; but it is a useful auxiliary to the positive restraint. 

Moral restraint (considered as one of the checks to population for the first time in the second edition, 1803) is a restraint from marriage, with a conduct strictly moral during the period of this restraint. Promiscuous intercourse, unnatural passions, violation of the marriage bed, and improper arts to conceal the consequences of irregular connections, are all exceptions to the head of this branch. Those positive checks which appear to arise unavoidably from the judgments of nature may be called exclusively Misery. Such are the checks which repress the superior power of population, and keep it on a level with the means of subsistence.

The Essay on Population, as the following analysis of its contents will show, places the question in every light which can elucidate the truth. It is divided into four books, the first of which notices the checks to population in the less civilised parts of the world and in past times. The second book passes in review the different states of modern Europe (most of which Mr. Malthus visited in the interval preceding the publication of the second edition), and he points out the checks to population which prevail in each. Chapter xi. of this book is "On the Fruitfulness of Marriages"; chapter xii. "On the Effects of Epidemics on Registers of Births, Deaths, and Marriages"; and chapter xiii. is devoted to "General Deductions from the preceding View of Society." The third book comprehends an examination of the different systems of opus and emigrants which have been proposed or have prevailed in society, as they affect the evils arising from population in the less civilised parts of the world and in past times. The fourth book treats of "Our Future Prospects respecting the Removal or Mitigation of the Evils arising from the Principle of Population." Chapter i. treats of "Of Moral Restraint and our Obligations to practise this Virtue." Chapter ii. is "Of the Effects which would result to Society from the prevalence of Moral Restraint." Chapter iii. is "Of the only effectual Mode of Improving the Condition of the Poor." And chapter iv. is "Of other means and Expectations respecting the Future Improvement of Society." Perhaps no author has been more exposed to vulgar abuse than Mr. Malthus. He was accused of hardness of heart, and represented as the enemy of the poorer classes, whereas no man was more benevolent in his views; and the earnestness with which he engaged in his work. "On Population" arose from his desire to diminish the evils of poverty to their lowest possible amount. His mind was philosophic, practical, and sagacious in his habits, tastes, simple and unassuming; his whole character gentle and plausible. The last edition of his "Principles of Political Economy" contains an interesting memoir of his life and writings by Dr. Chalmers, who had known him intimately for half a century. A list of Mr. Malthus' works and writings is given in page 42 of this 'Memoir.'
which tends to increase the quantity of human food, and every improvement in the processes for obtaining the necessities of life should be accompanied by a corresponding advance in the intellectual and moral character of a nation, in order to secure all the advantages which these improvements are calculated to produce.

Mr. Malthus's theory is now generally accepted as the true exposition of the principle of population. Many of the objections that have been urged against it are hardly worth serious notice. It has been advanced to an infinite degree the Scripture command, 'Increase and multiply,' forgetful of the moral obligations which are imposed in connection with it. Others have imagined that they have discovered a supernatural law of nature which would prevent the increase of human population. Dr. Price, Mr. Godwin, and Mr. Sayler entertained this opinion. Mr. Malthus's reasons for not replying to Mr. Godwin's work are stated in the appendix to the sixth edition of the Essay on Population. The fallacies of Mr. Sadler's work are most fully exposed in the Edinburgh Review, No. 102. Mr. Senior is the only economist of any distinction who has objected to the theory of Mr. Malthus. He contends, in his 'Two Lectures on Population,' that the doctrine that the means of subsistence have a natural tendency to increase faster than population.

The appendix to these 'Lectures' contains a correspondence between Mr. Malthus and Mr. Senior on their respective views. It exhibits the latest views of Mr. Malthus, though, after forty years' experience, he has made no change in his opinions. The latest work on population (published in the middle of 1840) is 'The Principles of Population, and their Connection with Human Happiness.'

The disputes about the principle of population, like those which have arisen in many other questions of a like kind, are mainly owing to the ambiguity of language: In fact they are very little more than questions about the consistent use of words. If we analyse the proposition of Mr. Senior, it will appear that it is not easy to conceive with clearness the meaning of its terms. The words 'means of subsistence' may signify the subsistence which is obtained from spontaneous products of the earth and from the natural increase of animals. The products of the earth may be said to have a natural tendency to increase, or naturally to increase, or rather to be produced; and it may, for argument's sake, be admitted, though it is not true, that animals have the same kind of natural tendency to increase, or are in like manner naturally increased, or rather are produced. There is no other natural tendency to increase, or natural increase, if the word 'natural' is to have its ordinary acceptation. The increase of population, or the produce of new population, may be said to be natural, exactly in the same sense in which the increase or produce of animals generally may be called natural. Hence the means of subsistence is the same as the word 'natural,' the proposition means that vegetables and animals (not including man) have a natural tendency to increase faster than man, who is also an animal—a proposition which is not worth the trouble of discussion.

But this is not the meaning of the writer who maintains this proposition: he is evidently speaking of human labour and its products when he is speaking of the 'means of subsistence.' The term 'means of subsistence' therefore contains the notion of human labour; and 'means of subsistence' are the products obtained by human industry applied to material objects. Everything 'natural' therefore is by the very force of the term 'means of subsistence' excluded from this word; for it is not of natural produce simply that the writer is speaking, but of that which human labour produces: in other words, though nature (to use the vulgar term) co-operates, the produce is not viewed as nature's product, but as the product of human labour. There is then nothing 'natural' in 'the means of subsistence,' and therefore there is no natural tendency to increase in the means of subsistence; and consequently the comparison contained in the phrase 'natural tendency of subsistence' has no natural tendency to increase, and things that, in a sense, have a natural tendency, is unmeaning. Whether then the assertion be that 'there is a natural tendency in population to increase faster than capital' (Mill), or 'that the means of subsistence are contrary to the natural tendency of population' (Senior), in either case the use of the word 'natural' is incorrect, and not only tends to cause, but does cause confusion. It should be observed that in enunciating his proposition, Mr. Senior sometimes omits the word 'natural.'

Again, the natural tendency of population to increase is simply the desire and the power to gratify the animal passion, the consequence of which is the physical union of the sexes and the production of a new kind. But if we are to interpret the word 'natural' (as we often do) in this very vague expression) is positively checked by want of food and other things necessary for human sustenance and health. If food and such other things could be had without any trouble, the population of the earth and such other things only necessary to its increase, population would go on continually increasing. But the actual conditions of obtaining food and such other things are human labour; that is, the labour of those animals, who, if supply with a sufficient range of objects, will make the 'natural' increases go on indefinitely. It appears then that this so-called natural tendency of population to increase has no effect, that is, it remains a tendency; that is, it is nothing at all in results, unless man labours; and the amount of his labour, in considering this question, is quite immaterial.

It is unimportant whether it consists in making a plough and ploughing the earth, or plucking an apple from a tree and eating it. The whole proposition then may be developed thus:—The means of subsistence are only produced or had by man's labour: these 'means of subsistence' so produced have no natural tendency to increase, except so far as man has a natural tendency to increase. Now, man has in general a natural tendency to increase, that is, he has a desire and a capacity to increase, and he can increase if he has the means of subsistence. But he must have the means of subsistence first; and if the actual means of subsistence are not sufficient, a natural tendency of population could not increase the population till the means of subsistence are increased. The 'means of subsistence,' at any given time and in any given nation, signify those things which the individual of that nation must have in order to supply the wants of his situation and the habits of society: they may be the bare means of supporting life; or they may be those things also which Mr. Senior has well defined under the heads of 'decencies' and 'luxuries.' If, while the means of subsistence remain to him, the population lower their scale of living, it may increase further, for the relative means of subsistence are by the supposition increased. It is true that this lowering of the scale of living is an evil, inasmuch as it tends to make society move in a retrograde direction; there is also a limit to the extent to which the scale of living can be lowered. The antecedent condition then on which the increase of population depends is its own labour, for it cannot be interested in the increase of the means of subsistence, and such increase is also the effect of its labour.

We can never contemplate human society in its origin. We must contemplate it in its progress and development. All theories as to how man began to propagate and gain the means of subsistence are of the greatest importance, because they form the groundwork of the whole problem that concerns his condition. We know this, and no more: at any given time and in any given state of society there is a certain population which subsists in a certain mode by and out of the means of subsistence which it then has; and these means are partly the product and accumulation of the actual generation and partly the accumulation of their progenitors. If the means of subsistence (thus understood) of that population are sufficient to maintain more than sufficient, any increase of the population must be prevented by increased labour, or by labour rendered more productive. We cannot suppose the population to increase first, and then the additional means of subsistence to be produced; for by the supposition the actual population has not the means of subsistence, and that which is 'increase' must be fed out of some other store.

If it is said that children may be born and die immediately, or very soon, the answer is, they either die before they have partaken of the means of subsistence, in which case they no more enter into the reckoning than means of subsistence produced but not enjoyed, because from some supposed inability they were not before could be used; or the children did live to partake of the means of subsistence, in which case they are properly included in the word 'increase.'

Now the fact is, that in some countries the means of subsistence are bare of sufficient for the support of the actual population; in others they are more than barely sufficient. In the former case there can be no increase of population.
until there has first been an actual increase, in the means of subsistence; in the latter there may be an increase of the population before there is an increase of the means of subsistence, and this increase of population may go on without any increase in the means of subsistence, until the people have reached the lowest limit of subsistence.

It is clear then that the ‘means of subsistence’ (as above explained) must be first, and increase of population may then follow, and generally it does follow to the amount of the increased means of subsistence; and further, population may sometimes increase beyond the amount of such increased means, but it is then of necessity checked by actual suffering in the whole or in a part of the society. And this, we must observe, is the same meaning of Mr. Malthus’s term ‘population.’

There seems to be an error (or rather, looseness of expression in most writers) in the mode of comparing the rate of increase of the two things, ‘means of subsistence’ and ‘population.’ There can be no useful comparison of the rate of increase between these two things except this: a given population may attain its increase, which is proportionate to the antecedent increased means of subsistence, in a less time than these increased means of subsistence were produced; or it may take a longer time. There is also no question about a tendency to increase either in the one thing or the other; the question is about an actual increase, which can only take place under the conditions already stated.

The question is perplexed, and its true statement rendered difficult, by the complication of subsistence. A whole means of subsistence and an increase of the population may be, and generally are, going on at the same time; and it seems to have been supposed that this increase of population, during a given time, is owing to the increase of means of subsistence; but it cannot be true, that a given amount of population cannot be increased, unless the actual amount of the means of subsistence of that population is first increased, or, which is the same thing, the rate of living is reduced. If some writers on this subject have not meant what is here imputed to them, they have certainly not sufficiently guarded themselves against the imputation.

There is still another consideration which perplexes the question. For very short periods it is certainly evident, and it is very probably the case, that sometimes population is increasing (in a certain sense) at a faster rate than the means of subsistence; that is, taking short intervals, it will or may be found that the population, during such intervals, has outstripped the means of subsistence existing at the end of such intervals, and a part of it must therefore die. These deaths consequently take place either in the whole population, or among those whose means of subsistence are reduced below the common rate of subsistence, and do even occur under such circumstances, as much as they did before, while others do not. In practice, a deficient allowance is not distributed among all, but some suffer and others do not. But on the other hand it is conceivable, and it may be found that in some intervals population may sometimes be increasing more rapidly than the contemporaneous increase of population; that is, the actual population may possess and be producing and accumulating the means of subsistence more than sufficient for the sustentation of themselves and of the addition to the population made during the time of such production and accumulation. Now this is certainly the fact in many societies, as to part of the society; one part is producing and accumulating more than is required for the means of subsistence of what is producing; this is the case with many of the middle classes in all industrious communities. At the same time another class is increasing its population at a greater rate than the means of subsistence applicable to such increase: the check to such an increase is obvious. There is no reason why this may not be true of a whole population, as it is of a part.

On the whole, the experience of mankind proves that the sexual passion will, if unrestrained, always increase the population of the world to the limit of subsistence at each moment existing; while the appetite for labour, by which the means of subsistence are produced, is easily satisfied. It would not seem strange then, if during short intervals the propagation of the species has been so active as to have exceeded the means of subsistence existing at each moment existing at the end of such intervals. But though the population during short intervals may so increase, its increase at the end of a series of such consecutive intervals can only be the effect of a previous increase in the means of subsistence; always supposing the condition of the people not to be growing worse, for there may be, as already observed, an increase of population up to the limit of a bare subsistence, without any actual increase in the whole means of subsistence.

Therefore the increase of the means of subsistence, that is, the products of human labour, are the antecedent conditions of any actual increase, and the increase of population may only be to the amount of such increase, but cannot surpass it. If the increase of population is greater than the increase of the means of subsistence, this increase of population, at the rate by which the supposition it depends, the increase is checked; and on taking the account at longer intervals, there is, or may be, no actual increase of the population. If for short periods the increase of the means of subsistence is not sufficient to make up the increase of population during the next period, there is, or may be, a constant fluctuation for short periods, the population and the means of subsistence alternately increasing with greater rapidity. But any increase of population, even for a short period, supposes a previous increase of the means of subsistence over those which the actual population found to be merely sufficient before the commencement of such short period; whatever may be the commencement of increase between the two during such short period. It seems then that in the sense here explained population may so rapidly increase that at the end of an interval from the commencement of which the increase of population is reckoned, the means of subsistence, which were insufficient for the then population and which were sufficient for the then population and something more, added to the means of subsistence produced during such interval, may be insufficient to support the population existing at the end of such interval, inasmuch as the same rate of increase of population, which at the commencement of such interval was living; and, on the other hand, the means of subsistence existing at the end of such interval may be more than sufficient to support the population existing at the commencement of the same interval of living. At the end of any long interval, if there is no production of population, as compared with the commencement of such interval, there has been during such interval, on the whole, a balance on the side of the means of subsistence, provided the mode of living has not been lower since that commencement of such interval was living; and a fortiori, there must have been such balance, if the mode of living has been raised; that is, the means of subsistence at the commencement of such interval, and those produced during it, have been sufficient to produce and leave in existence at the end of such interval, a larger population than at the commencement of it. This excess on the side of the means of subsistence, if distributed equally through every moment of the long interval, would leave at the end of each of those moments just such intervals of existence for the increase of the population as existed during the same period as that just referred to; and such intervals of increase as form a proportionate increase of the population.

In discussing this question, it is always actual increments that are to be considered, and both for short and long periods. The tendency is nothing; for a tendency of any kind, that is, a capacity to or for a given end, means nothing in such speculative discussions, unless it becomes an effect.

The principle of population is stated by Mr. Malthus with more precision than by any other writer, and it has been adopted by his successors. It is this: the capacity of the human species for increasing at an augmented rate is beyond all the means of subsistence, and the species can therefore never be brought to the subsisting state of any of the tribes of animals. There is no reason to think that this capacity will ever be extinguished; it is not always quite free from objection, its real meaning is perfectly so. His correspondence with Mr. Senior shows this. The importance of right notions on this subject must be assumed for this further attempt at explaining it.

POPIUS. [Oasis.]

PORCELAINE. [Pottery.] PORCELLA'NA, Adamson’s name for the testaceous form known to modern zoologists by the name of Margi- 

POPE. [Pope.]

PORCELLAIN. [Pottery.] PORCELLAN'IA, Adamson’s name for the testaceous form known to modern zoologists by the name of Margi- 

PORCELLAN'IA, a tribe of Anomurus Crusta- 

PORCELLAN'IA, a tribe of Anomurus Crusta- 

M. Milne Edwards observes that this small tribe is principally composed of crustaceans which have quite the form of the Brachyura, but which are distinguished from all the Decapods of which that author had previously treated by
POR 411 POR

their fan-like caudal fin, more or less resembling that of the
Maccura. He states that be only knows a single genus
having this conformation, viz., the Porcellana. He has
been induced to place it in the same division Angia, which
establishes the passage between the Porcellana and the
Galatheae, and which have hitherto been approximated
to the last, as well as Megalops, which form is perhaps
nothing but a modification of some of the preceding.
pletely, whose development is not complete. To distinguish
between these three genera it is sufficient to collect that in
the Porcellana and the Angia, the fifth pair of feet are
flilliform and bent back above the others, whilst in Megalops
they are formed like those of the former, and that the Angia
have the body elongated and the abdomen very stout, whilst
the Porcellana have the body nearly circular and the abdomen
very delicate. Provisionally, M. Milne Edwards arranges
Monolepis of Say in this tribe, which form M. Milne
Edwards ascribes to the Porcellana because their
belonging to this section appear to have a wide geographical range whose are recorded from New
Zealand, New Irelad, Java, and the Isle of France, as well
as Chile.

a. Front triangular.

Example, Porcellana violacea. Length about an inch.
Locality.—The coasts of Chile.

b. Front strictly or slightly rounded.

Example, Porcellana sculpta. Colour reddish with great
white spots. Length about three lines.

Locality.—The coasts of Java.

Two other species are recorded, one of them from the China
seas: the other is Porcellana viridis, Gray, Zool. Misc. ;
Porcellana viridis, Leach.

2. Species whose front is divided into three or five teeth
or lobes.

b. Hands very wide and flattened. Pincers triangular.
Example, Porcellana planchaele. Length about 7 lines.
Colour brownish.
Locality.—Coasts of England and France.

M. Milne Edwards divides this genus into the following
sections:—

§ 1. Species whose front is entire and does not present
lateral teeth.
a. Front triangular.

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Locality.—The coasts of Chile.

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Example, Porcellana violacea. Length about an inch.
Locality.—The coasts of Chile.

b. Front strictly or slightly rounded.

Example, Porcellana sculpta. Colour reddish with great
white spots. Length about three lines.

Locality.—The coasts of Java.

Two other species are recorded, one of them from the China
seas: the other is Porcellana viridis, Gray, Zool. Misc. ;
Porcellana viridis, Leach.

2. Species whose front is divided into three or five teeth
or lobes.

b. Hands very wide and flattened. Pincers triangular.
Example, Porcellana planchaele. Length about 7 lines.
Colour brownish.
Locality.—Coasts of England and France.

M. Milne Edwards divides this genus into the following
sections:—

§ 1. Species whose front is entire and does not present
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impossible to straighten it completely; it is very wide, and
furnished above with seven crustaceous segments, but com-
pletely membranous below. The fin which terminates it is
very wide, but its median piece (formed by the seventh ab-
dominal ring) is small, and does not form a fan with the
lateral pieces, which are distant from it, being supported on
very long basilar joint. In the male, the first five rings of
the abdomen are completely deprived of appendages; but
in the female there are four pairs of false oviferous feet,
which are simple, nearly membranous, and each terminated
by a small oval blade. (M. E.)

M. Milne Edwards remarks that this genus, in his opinion,
approaches the Porcellana more nearly than the Galathaea,
next to which they had been hitherto placed; but the con-
stitution of the abdomen of the Aeglea seems to him to
indicate that their natural position is in the section of Ano-
mura. [Galatheidae.] Example, Aeglea levis. Length about two inches.
Locality.—Coasts of Chile.

Aeglea levis.

Megalops, Leach.

M. Milne Edwards observes that the small crustaceans
designated by this generic name has much analogy with the
Galatheidae, but not the Porcellanidae; and if be
really animals arrived at their entire development, they
would seem to establish the passage between the Anomo-
rous and Macrurus Decapods; for their abdomen, though it
does not present at its extremity five blades united into
a fan-shape, as in the last, is very much developed, and serves
for natation. But be is led to believe that they are only
the young of some anomurous crustacean; and that when
the form has been better studied, it will be erased from
the list of genera which compose the order of Decapods, or, at
least, will be assigned a different place and other characters.
[Megalops.]

Monolepis, Say.

M. Milne Edwards is inclined to believe that this genus
ought not to be retained, and that it has only been estab-
lished on young crustaceans not arrived at their complete
development; but not having himself observed them, he
cannot form a decisive opinion on this point. They appear,
he adds, to have the greatest analogy with Megalops and young
Dromius. The reader is referred to Mr. Say's paper
on the subject, in the 'Journal of the Academy of Phila-
delphia; to Desmarest's work (Conid. sur les Crust.); and
to the 'Histoire Naturelle des Crustacés' of M. Milne
Edwards. The species recorded are both American.

Porcellio. [Isopora, vol. xiii., p. 55.]

Porch (from the Latin porticus), a general term for
any projection forming a covered space immediately before
the entrance to a building, open in front, and more or less
enclosed at its sides. The distinction between a porch and a
portico is, that however important it may be as a feature,
the former appears only a subordinate part of the building
to which it is attached; whereas the other (Portico) may
be the whole of a building; therefore, although the term
porch is usually employed only in speaking of Lowelnc, Norm,
and Gothic, and similar styles, it would be more correct
and convenient to apply it, without regard to style, to what
bears the character of a porch. By attending to such dis-
tinction, misconception would seldom arise; for instance,
if the Athenem Club-house, London, were described as having a Doric portico, any one unacquainted
with the design would imagine that the order was carried up as high as the general entablature of the building;
whereas by terming it a Doric porch, such misconception
would be avoided.

As far as we are aware, the only instance of a porch in
Greek architecture is that in the octagonal structure called
the Tower of the Winds, or that of Andronicus Cyrrheus,
which has a small prostyle portal on two of its faces, north-
east and north-west, each consisting of a simple clype, or
two columns and their entablature, surmounted by a pedi-
ment; and which therefore may be regarded as the proto-
type of those ornamental compositions for doors and windows,
so greatly affectent in Italian architecture, which present a
microstyle application of the Doric portico, that is, small columns
adapted not to the entire structure, but to subordinate parts
of it.

When portico fronts were laid aside, as partaking too
much of the modes of Pagan temples, columns began to be
r.-not only attached to the building, but employed as
microstyle decorations to its different external stages or
stories, often very irregularly, and generally connected to-
gether by arches; in short, when the Roman style was
transformed into and superseded by the Byzantine—what
Mr. Wightnum terms the Constantinian—and the
Lombardic styles, porches began to be important features,
subordinate indeed in size to the structures to which they
were annexed, but principal in regard to embellish-
ment, being frequently composed of groups of small col-
umns, elaborately wrought, and some of them often placed
on the backs of lions or other animals, and supporting a
series of concentric arches or archivolt mouldings equally
enriched, sometimes with a microstyle embellishment, that
seems to have been carried to such a height as to be ultimately
lost sight of: the columns became at length mere subsidiary
members, and a combination of vertical mouldings or shafts
cut out of those receding columns constituted the general splay
of the whole portal, which was thus extended in appearance
ad libitum, without regard to the size of the actual door-
way or aperture itself, a very important advantage as regards
design. In the Norman-Gothic style, the porches or portals
are little more than a modulation of the similar features in
Byzantine and Lombardic architecture. Of porches
which are strictly so called, that is, portals projecting out from
the edifice, and so as to form a sheltered external vestibule, we
have few Norman instances, and those do not occur in the
principal front, but at the sides of buildings. The same also
is the case in Gothic architecture, where, though we often meet
with spacious and magnificent portals, especially in contin-
ental examples, we do not find advanced porches brought
down beyond the general plan of the building in front; the
porch being there almost invariably closed with doors, and
the lower part of the structure, even where it may be said to
project with respect to that part of the front which is seen
above it, on a different plane, as for instance in the front of
Westminster Hall, London, or the Cathedral of Canterbury,
though in those cases the entrances are placed rather with
sharp recesses than porches. In church architecture, entrances
of the last-mentioned kind hardly ever occur at the west
front, but there frequently made very conspicuous features in
the side elevations, of which we have several instances in the
beautiful north porches at Salisbury and Wester cathedrals,
both of which advance out very considerably.

In our ancient domestic architecture, on the contrary, the
porch, where it occurs at all, forms a marked, though not
always a central feature, in the principal front. When it
projects from the main structure, it is usually carried up so
high that we have not so far observed what a bay in a room,
or open place, is called a porch, but to form a kind of tower;
or else the porch is recessed within the building, and presents externally merely an open
arch. In many Elizabethan buildings, the porch, though
forming a narrow compartment of the whole front, is
roused, even when the rest is quite plain. So at Kirby, in Northamptons, the seat of Lord-Chancellor
Hatton, it offers a most elaborate, not to say extravagant,
example of this kind. In modern imitations of our older
domestic architecture, it is now usual to carry the
entrance porch in such manner that carriages can drive
into it, by making an arch of sufficient width on each of its
return or sides. But as it is generally managed, the effect
is somewhat gaudy and unbecoming. Even that which
forms the state entrance in the quadrangle at Windsor Castle is
by no means unexceptionable.

PORCHESTER CASTLE. [HAMPSHIRE.]
PO'RICIA. [BRETSCH.]

PORCUPINES, Hystricidera, a family of rodent quadrupeds.

The genus Hystricidera of Linneaus embraces those Rodents whose covering consists, for the most part, of a kind of offensive and defensive armour, in the shape of spines or quills, instead of hairs.

Cuvier, who places the Porcupines between the genus *Mammalia* [Cuvier] and the genus *Lepus*, observes that they are to be recognised at the first glance by the stiff and pointed spines with which they are armed, after the manner of the Hedgehogs among the Carnivours. Their mode of life is similar in a great number, with a flattened crown, variously modified by layers of enamel, which leave deep intervals; their tongue is rough with spiny scales; their clavicles are too small to be applied to the sternum and omoplate, and are only suspended by ligaments. Many of them live in the arrows, and have much the habits of Rabbits. Their grunting voice, joined to their large and truncated muzzle, has, says he, in conclusion, caused them to be compared to the Hog, whose their French name is *Porc-Epic*, and, he might have added, their English appellation.

He divides the group into, 1, the Porcupines properly so-called (*Hystricrista, Lin.*); 2, *Atherura, Cuv. (Hystric fistuculata, Lin.*); 3, *Les Ursins (Eritinons, F. Cuv.; Hystric fistuculata, F. Cuv.; Hystric prehensilis, Lin.; and Hystric insidiosa, Licht.*).  

Mr. J. E. Gray makes the *Hystrixid* the second family of the order *Glios*, with the following character:—

Cutting teeth two each in jaw, lower truncated; grinders 4—4 in each jaw, rooted, compound; tongue and body covered with spines; clavicles none.

+ Tail short.
+ *Hystrix.* 2. *Athura.*

++ Tail elongated.


This family is placed by Mr. Gray between the *Muridae* and Leporidae.

Mr. Bennett (Zoological Gardens) remarks that all the Porcupines have four cheek-teeth on each side of either jaw, furnished with distinct roots, nearly equal in size, irregular but somewhat circular in outline, presenting in the young state, on the surface of their crowns, several tubercles, of various size and form. He goes on to observe that, as the teeth are worn down, in advancing age, these tubercles give rise to as many elliptical layers of enamel occupying the centre of the tooth, while its circumference is marked, both internally and externally, by a series of parallel lines.

He was describ'd by the other leading features and peculiarities. *'Their tongues,' says he, 'are rougedhen by papilae, like those of cats; their heads generally short and truncate; their nostrils large and open; their ears and eyes considerably large; and their general form short, thick, and clumsy.*

With regard to the arrangement of this natural family, proposed by M. F. Cuvier, the same author observes that the French zoologist has attempted to subdivide it into smaller generic groups, dependent chiefly on his own theoretic notions of the value of the slightest modifications in the form of the skull and teeth in the discrimination of genera. Some variations in the number of toes, and still more remarkable peculiarities in the structure of the tail, are brought in aid of this subdivision; but Mr. Bennett remarks that he can scarcely admit the justice of M. F. Cuvier's views, unless supported by a marked difference in the mode of life, such as exists between the burrowing porcupines of the old continent, the arboreal species of North America, and the prehensile-tailed climbers of the south. Mr. Bennett, however, though not without some hesitation, adds that the views of regard to this subject, which he considers as furnishing the type of a new genus, to which he would add, as a second species, the Landskip's *History of Sumatra.*

Mr. Cuvier expresses a suspicion that the genus *Hystricidera* is one of the most typical in the order Rodentia, and he observes that M. F. Cuvier appears moreover to have distinguished the five types of forms which Mr. Swainson thinks every natural group is sure to contain.

The typical or Common Porcupine has, says Mr. Swainson in continuation, the spines of very great length, but the tail is very short.

The next type is M. F. Cuvier's subgenus Erythizon, in which, Mr. Swainson observes, the proportions of the European species are much more completely reversed. The hair of the body, which in *Hystricidera* is much shorter than the spines, in this type is considerably longer; while the spines themselves are so short that at a distance they are rarely seen. The tail also is nearly half as long as the body.

The third subgenus, he remarks, has the tail, which is short in *Hystricidera*, and moderate in *Erythizon*, of consider- able length, and it is further distinguished by being prehensile. *'A more important circumstance,'* remarks Mr. Swainson, *'for considering this animal as the type of a subgenus could not possibly be named. One half of the tail is covered with spines, and the other with scales. There is no doubt that M. F. Cuvier is perfectly right in supposing that the species described by Azara is different from that mentioned by Buffon. We ourselves, in fact, although unable to transport the skins, have seen two very different kinds of these prehensile-tailed porcupines, in the forests of Brazil; and no doubt others exist in that vast continent. This fact however is sufficient to show that M. F. Cuvier, one of those "amateurs of generic divisions," as he is spoken of by a modern compiler, has found this genus upon the whole in most solid principles. The Indian porcupines constitute the subgenus *Acanthion*, and they differ very remarkably from all the preceding; the spines are not longer round, but assume the flattened appearance of strips of parchement; and M. Cuvier remarks that in one species, *Physticus fistuculata* of Linneus, the spines of the body are flattened like a sword-blade; the tail is long and terminated by a bundle of spines, "flattened like strips of parchement." There must be something very different in the habits of these Indian porcupines from those of America and Europe; nor would an ordinary observer class them in the same genus; for we even find that Desmarest, one of the best zoologists of France, considers the animal in question as belonging to a different genus *Mus*, giving it as its name, a species Aporrhinus. Thus much for the distinctions of the subgenus *Acanthion*, of which three species have already been discovered.*

The last subgeneric group noticed by Mr. Swainson is *Spygurus*, and, in further proof that M. F. Cuvier has un- consciously marked out the circular arrangement, and defined the natural subgenera of the genus *Hystricidera*, Mr. Swainson remarks that the two most typical, *Hystricidera* and *Acanthion*, agree in their teeth, while the three abortive types, namely, *Erythizon, Synethes,* and *Spygurus,* possess certain modifications, constant among themselves, but sufficiently distinct from the former.

In the arrangement at the end of the volume (Classification of Quadrupeds) from which we have quoted, the genus *Hystricidera* stands at the head of the second division of the Glios (clavicles rudimentary or none; and *Mys*, adopted the following subgenera, established by M. F. Cuvier, but rejects *Athura* as being only an abortive type:—*Acanthion, Erythizon, Synethes,* and *Spygurus.* The genus *Hystricidera* is fixed by this of *Lepus.*

Mr. Waterhouse, in his tabular view of the distribution of the Rodentia, laid before the Zoological Society of London, in November, 1839, makes the subfamily *Hystricidae* consist of the *Hystricidera*, the Ochotonidae, the Chinchillidae, and the Sciuridae. To Europe and North Asia he gives one species of *Hystricidera* (Hystricidera), To North America, one *Erythizon* (Erythizon). To Africa one *Hystricidera*. To India and the Indian Islands two, viz. one *Hystricidera* and one *Atherura*. To South America and the West Indian Islands he gives five, viz. three of *Cercolabes* and two of *Synethes*.

We proceed to lay some of these findings before our readers.

**Hystrix, Linn.**

This genus is distinguished by the head being more or less convex, and by the development of the bones of the nose, which are very much extended; temporal and orbital fossae very small; palatal bones depressed, ocipital and sagittal sinuses projecting; teeth, tail short, and barbed, and the inter-radiate, terete plantigrade, the anterior tridactyle, the posterior pentadactyle, armed with large nails.

M. F. Cuvier gives to the Porcupines (*Hystricidera* and the *Acclantoid*) the following—

**Dental Formula:** Incisors 2; molars 4—4 = 20.
Example. *Hystrix cristata*, the Italian or African Porcupine, or Common Porcupine.

**Description.**—When full grown about two feet in length; longest spines exceeding a foot. General colour grizzled dusky black, resulting from an intermixture of various shades of white, brown, and black. Upper part of the head and neck furnished with a crest of long lighter-coloured hairs capable of being raised or depressed at pleasure. Hair on the muzzle and limbs very short, almost black on the limbs; that of the neck and under parts brownish, and of considerable length. On the fore-part and sides of the neck a whitish band; all the remaining parts of the back and sides, including the rump and upper parts of the hinder legs, armed with spines, which are longest on the centre of the back. The spines almost of the thickness of a goose-quill in the middle, supported at the base by a slender pedicle, and terminating in very short points, strutted longitudinally and ringed alternately with black and white; the rings an inch or more broad. Their usual position is lying nearly flat upon the body with the points directed backwards; when the animal is excited they are raised by the means of the subcutaneous muscles, almost at right angles with the body, and then present a very formidable appearance. They are not capable of being detached at the pleasure of the animal. The tail-quills are, as it were, cut off in the middle, and consequently open at the ends, and produce a loud rustling noise when the animal agitates its tail. (Bennett.)

This is the *porcup* (*Hystrix*) of Aristotle and the Greeks, and according to Agriolus, the *Sanquestrupae* (Acanthocherus) of the latter; *Hystrix* of the ancient Italians; *Istruce* of the modern Italians; *Porocytes* of the French; *Stachelwuchse*, *Dornschwein*, and *PorIDGET* of the Germans.

**Habits, Food, &c.**—The Porcupine is a nocturnal animal, sleeping in its burrow during the day, and coming forth at nightfall to seek its food, consisting principally of roots, fruits, and tender leaves. Thunberg states that its usual food nearly resembles the Cape, where it is called *Porere*, is that root of that beautiful plant the *Calla Ethiopia*, which grew even in the ditches about the gardens; but he adds that it will frequently dig in to put up with cabbages and other vegetables, and sometimes commits great depredations in these gardens. The story of its power of shooting its quills to a distance at its enemy is merely glanced at by Aristotle (*Hist. Anim.,* ix. 39), but dwelt upon by Pline with his usual love for the marvellous. (*Hist. Nat.,* viii. 35)elian, Oppian, and Claudian have repeated this tale with exaggerations. In suddenly raising his spiny armour, a loose quill may be detached by the porcupine; but the power of ejeculation to a distance does not exist. There are usually several openings to the porcupine's burrow, and the young, raised sides, and directed at the enemy, are usually a hundred feet in the nest among the young. Pennant says, 'These animals produce a bezoar; but according to Seba, only those which inhabit Java, Sumatra, and Malacca. These bezoars were very highly valued, and have been sold for five hundred crown's a piece. It was also more pretended that a stone was procured from the head of this animal infinitely more efficacious than other bezoars (Tavernier); but this may be placed among the many impositions of Oriental empires.' In September 1833, the secretary of the Zoological Society called attention to a young *Hystrix cristata* which had been recently brought forth in the menagerie, being the first instance of such an occurrence in this species, and respecting which he added that observation of the young while suckling confirmed the correctness of Blumenbach's statement that the nipple is nearly axillary.

**Geographical Distribution.**—*Hystrix*, says Pline (loc. cit.) genera *India et Africa*. Agriolus, in his book, De Anim. exot., *Hystrix terrarama*, referred *Istruce* of *India et Africa, unde ad nos nuper allatum est.* Pennant states that it inhabits India, the sand-hills on the south-west of the Caspian Sea, Southern Tartary, Persia, Palestine, and parts of Africa. He adds that it is found wild and is brought into the markets of Rome, where it is eaten, but that it is not originally a native of Europe (for this last he quotes Agriolus). The specimens from Italy are generally rather smaller, and have shorter quills. See further the quotation from Mr. Waterhouse's tabular view cited above.

Lieut.-Col. Sykes has described a species under the name of *Hystrix teucraus*, Sagal of the Mahtratts, as *Hystrix caspiod alba*. He states that the animal appears to be distinct from the European species, which it closely resembles in form and covering. It is nearly a third larger. All the spines and open tubes of the tail are entirely white, which is not the case in *Hystrix cristata*. The spines of the crest also are so long as to reach the insertion of the tail. The ears are much less rounded, and the nails are shorter, infinitely deeper and more compressed, and with deep channels below. The white gular band is more marked; and, finally, the Asiatic species is totally destitute of hair—spines, where wanting, being replaced by strong bristles even down to the nails. (Zool. Proc. 1830, 1831.) Mr. Hodgson notes this species among the mammals of Nepal, as inhabiting the central and lower regions. (Zool. Proc. 1834.)

*Attherus, Curv.* (Acantidium? F. Curv.)

Neither the head nor the muzzle convex; tail long but not prehensile; feet like those of *Hystrix.*
Example; *Atherura cristata*, *Hystric fuscoculata*, Shaw; *Le Porcypic à queue en pinceau*, Buff.

Cuvier describes this species as having the spine of the body hollowed into a furrow, and having the tail terminated by a band of flabby flattened strips (bâtonnet corrombes aplatis) constricted at intervals (étranglees d'espace en espace).

Mr. Bennett (Gardens and Menagerie of the Zoological Society) remarks that although tolerably described and figured by Buffon, this species had been lost to science until within two years from the time he wrote (1830), when it was recovered almost simultaneously both in its original habitat and in a very distant quarter of the globe. Sir Stamford Raffles, however, had described it before, and he presumes that the authority on which it was formed into a new genus by Cuvier was a skeleton and skin transmitted from India by Mr. D'Arca in the year 1828. Nearly at the same time, he tells us, a living individual was brought to England and presented to the Zoological Society by Lieutenant Vidal, who accompanied the expedition for the formation of the projected colony at Fernando Po, where these animals were found in such plenty as to afford a staple article of food to the inhabitants. It has been conjectured, he adds, on very probable grounds, that they are not indigenous in the island, but have been brought thither from the East by the Portuguese, who were formerly settled there. The parts of the body borne on the forehead between the two regions can scarcely be regarded as conclusive evidence of their having been introduced into the colony, while there are such striking instances of animals common to India and the west of Africa as are furnished by the lion, the leopard, &c.

Mr. Bennett proceeds to state that in the teeth and in the organs of motion it corresponds, as Baron Cuvier has noticed, with the common Porcupine, from which it differs chiefly in the form of the head; the line of its profile, instead of being elevated into a curve of large extent, passing in a very straight direction from the occiput to the extremity of the nose. In these respects, Mr. Bennett remarks in conclusion, it agrees with M. F. Cuvier's genus *Aonithos*, founded on this very character observed by the latter on two skulls preserved in the Paris museum, the one from Java, the other, in all probability, from Africa. These coincidences would have induced Mr. Bennett to consider the two genera as identical, were it not that Baron Cuvier has omitted all mention of that established by his brother, although the materials for comparison were fully at his disposal: M. F. Cuvier moreover enumerates them both in his genera of Mammalia.

Mr. Bennett further observes that Linnaeus founded his *Hystric Macoura* on Seba's figure; but Buffon having quoted neither Seba nor Linnaeus, Dr. Shaw took it for granted that this was the same animal, and consequently gave it a new name—*Hystrix fasciculata*. Mr. Bennett entertained however but little doubt, notwithstanding some trifling discrepancies in the figure, that Sir Stamford Raffles was right in his conjecture that they both represent one and the same species.

The following is Mr. Bennett's accurate description:

'The difference between this species and the common Porcupine are obvious at the first glance. Its general colour is nearly the same, but with less intermingration of brown. The upper parts of the body, the outer sides of the limbs, and the head, neck, and face, are of this dusky hue; but the under parts, inside of the limbs, and part of the neck, and throat, are of a greyish white, with the exception of a darker brown line along the edge of the fore foot. The spines commence upon the back of the head, where they are little more than an inch in length, and extend to the root of the tail, occupying nearly the whole of the back and sides. The longest are scarcely more than from four to five inches in length, and extend to the root of the tail, occupying nearly the whole of the back and sides. They are mostly white at the base and black towards the extremity, but the points are tipped with a brown, which gives them the appearance of a single hair. A few slenderer spines running into long black bristles are occasionally intermixed with the others. The greater part of the tail is bare both of hairs and spines, and covered only by flat blackish scales disposed in rings, the tip alone being surmounted by a tuft of long flat bristles having the form neither of hairs nor of quills, but bearing a close resemblance, as Buffon has aptly remarked, to narrow slips of parchment cut in an irregular manner. This tuft is of a whiteish colour, and about two inches in length. The entire length of the body in our specimen is little more than a foot, and that of the tail from four to five inches. The whiskers are very long; the eyes small and black; and the ears short, round, and naked.'

Habits, Food, &c.—The author last quoted states that, like the rest of its tribe, this species sleeps during the day, and becomes in some degree active only on the approach of night. Its intelligence, he adds, is equally limited, and its manners equally full of those of the common species, like which, 'it raises its spines when irritated or disturbed, stamps with its feet upon the floor of its cage, and swells and looks big in its defensive armour.'

Geographical Distribution.—The neighbourhood of the Celebes (Seba); Asia (Linn.); Malay Peninsula (Buffon); Islands of the Indian Archipelago (Pennant); Sumatra (Sir Stamford Raffles); Fernando Po (Vidal).

*Erethizon.* (F. Cuv.)

Cranium flat; muzzle short and not convex; tail moderate; quills short and half hidden in the hair.

The following is from M. F. Cuvier's figure of the teeth of *Erethizon*, *Synemeris*, and *Spinigera*.

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Example, *Erethizon doratiss*, *Hystric doratiss*, Linn. Description.—Ears short, hid in the fur; head, body, legs, and upper part of the tail covered with short, long, dark-brown hair; on the upper part of the head, back, body, and tail, numbers of sharp strong quills, the longest on the back, the least towards the head and sides, the longest three inches, but all hid in the hair; intermixed are some stiff straight bristles, three inches longer than the rest, tipped with white; under side of the tail white; four toes on the foot, both ends of each armed with long saws, hollowed on their under side; the form of the body is exactly that of a beaver, but is not half the size; one which Mr. Banks brought from Newfound land was about the size of a hare, but more compactly made; the tail about six inches long. (Pennant.)

These animals vary in intensity of colour. Pennant alludes to one entirely white in the possession of Sir Ashton Lever.

This is the *Cavia Hudsonii* of Klein; *Hystric Hudsoni*, of Brissin; *Hystric pilosus* of Catesby; *Hystric doratiss* of Linnaeus; *L'uron* of Buffon; *Canada Porcupine* of Forster, Pennant, and others; *Catiecwa* of the Cree Indians; and *Ootheck* of the Esquimaux.

The Canada Porcupine is a sluggish animal. Hearne says that the Indians going with packets from fort to fort, often see them in the trees, but not having occasion for them at the time, leave them till their return, and should their absence be a week or ten days, they are sure to find the porcupines within a mile of the place where they had before seen them. Mr. Hutchins states that, in walking, the tail is drawn along the snow, making a deep track, which is often the means of
betraying the animal; but that its haunts are most readily discovered by the barked trees on which it has fed, which, if barked the same winter, are sure signs of its vicinity. They are, he says, usually found on the branches, and, on approaching them, they make a crying noise like a child. Then the tree is cut down, and the animal killed by a blow on the nose. Dr. Richardson informs us that this species is found on the banks of the Mackenzie, as high as lat. 67°, and that, according to American writers, it ranges as far south as lat. 37°. He adds, that it is said to be very rare in Virginia, but to be numerous in some parts of Kentucky; and that it is reported to have multiplied greatly, of late years, near Oneida Lake in the state of New York. (Conzena.) Dr. Richardson further states that in the fur countries it is most numerous in sandy districts covered with the Pinus Banksiana, on the bark of which it delights to feed; that it also eats the bark of the larch and spruce firs, and the buds of various kinds of willow; and that, in the more southern districts, it is said to feed chiefly on the bark and leaves of the Pinus Canadensis and Tilia glabra, and to be fond of sweet apples and young maize, which it eats in a sitting posture, holding the food to its mouth with the fore-paws. 'It is,' continues the Doctor, 'readily attacked by the Indian dogs, and soon killed, but not without injury to its assailants, for its quills, which it erects when attacked, are rough, with minute teeth directed backwards, that have the effect of rendering this seemingly weak and flexible weapon a very dangerous one. Their points, which are pretty sharp, have no sooner insinuated themselves into the skin of an assailant, than they gradually bury themselves, and travel onwards until they cause death by wounding some vital organ. These spines, which are detached from the porcupine by the slightest touch, and probably by the will of the animal, soon fill the mouths of the dogs which worry it, and unless the Indian women carefully pick them out, seldom fail to kill them. Wolves occasionally die from the same cause. The Canada Porcupine makes its retreat amongst the roots of an old tree, and is said to pass much of its time in sleeping. When disturbed, it makes a whining or mewing noise. It pairs in the latter end of September, and brings forth two young ones in April or May. Its flesh, which tastes like flabby pork, is relished by the Indians, but is soon nauseated by Europeans. The bones are often deeply tinged with a greenish-yellow colour. Like other animals which feed on coarse vegetable substances, it is much infested by intestinal worms. The quills or spines are dyed of various bright colours by the native women, and worked into shot-pouches, belts, shoes, and other ornamental articles of dress.' (Fauna Boreali-Americana.)

Synetheres. (F. Cuv.)

Muzzle large and short; head convex in front; spines short; tail very long, naked at the end, and prehensile, like that of an opossum (Sarigue) or of a Sapajou; feet with only four toes, armed with claws.

Example, Synetheres prehensilis; Hystrix prehensilis, Linn.

Description.—Nose short and blunt; long white whiskers; beneath the nose a bed of small spines; top of the head, back, sides, and base of the tail covered with spines; the longest on the lower part of the back and tail, three inches in length, very sharp, white, barred near their points with black; adhere closely to the skin, which is quite naked between them; are shorter and weaker as they approach the belly; on the breast, belly, and lower part of the legs are converted into dark brown bristles; feet divided into four toes; claws very long; on the place of the thumb a great protuberance; tail eighteen inches long, slender, and taper towards the end; the last ten inches almost naked, having only a few hairs on it; has, for that length, a strong prehensile quality. (Pennant.)

This appears to be the Cuandu (major) of Maregrave and Piso; Orco Cachero and Espinho of the Portuguese; and Ixiazan articulated of Hernandez; the Brazilian Porcupine of authors.

Habits, Food, Geographical Distribution, &c.—The Brazilian Porcupine appears very much to resemble the European Porcupine in its habits, living in woods, sleeping by day, and feeding on fruits, &c. by night. Maregrave states that its voice is like that of a soay. The quills are stated to have the same penetrating and destructive quality as those of the Canadian species. It is a sluggish animal, climbing trees very slowly, and holding on with its prehensile tail, especially in its descent. It grows very fat, and the flesh is said to be white and well-favoured. Our cut is taken from a living specimen in the garden of the Zoological Society, Regent's Park.
only notices of them by the antients themselves, which are found in their remaining works, occur in the 'Collectiones Mathematicae' of Pappus Alexanderinus, and the commentaries of Proclus on the Elements of Euclid, in both places so very imperfectly, that till of late years mathematicians were acquainted with a porism, being in some measure between a problem and a theorem. But Proclus, however distinguished as a philosopher, was no mathematician, and as a circle, from Euclid's definition of it, must have a centre, the proposition to find such a porism. The circle had been defined from another of its properties, from its being produced by the extremity of a straight line moving at right angles to another straight line, given in magnitude and position, and in the same plane, so that every point on the circumference is at a given distance from the centre; or to be the rectangle by the segments into which it divides the given line; and then the finding of the centre would be a proper porism, and might be enunciated thus:—'within a given circle (defined in the manner just mentioned) a point may be found from which all straight lines drawn to the circumference will be equal.'

Having thus placed before our readers the most probable restoration of the antient meaning of the term porism, we proceed to notice briefly what modern geometers have given us on the subject. First in importance stands the admirable paper on porisms by Professor Playfair, in the first volume of the Transactions of the Royal Society of Edinburgh, Edinburgh, 1818. He improves on Simson's definition, and substitutes the following:—A porism is a proposition affirming the possibility of finding such conditions as will render a certain property true, or capable of being demonstrated by certain operations. This, it must be confessed, is an important and elegant simplification, and fully conveys every idea contained in the more prolix definition of Simson; but at the same time we agree with Dr. Trail in thinking that Dr. Simson's is expressed more nearly in the language and manner of the antient geometers:—'Though I admire the ingenuity and fully admit the soundness of this definition, I am still of opinion that the word porism is too commonly in the discovery of porisms, I must acknowledge my doubt of that particular notion of a porism having ever been adopted, or even proposed, among the antient geometers.' (Trail's Life of Simson, p. 50, 51.) A paper on porisms, containing some examples in the higher geometry, by the present Lord Brougham, was inserted in the Philosophical Transactions of the Royal Society, 1785. Frayer has given a popular history of the discovery of porisms, in the last edition of his Elements of Geometry. Let us now complete the exposition of them that has yet appeared may be found in the Aperçu méthodique sur l'Origine et le Développement des Méthodes en Géométrie, 4to. Brux., 1837, by a mathematical judge of porisms, a member of the French Institute, and one of the most distinguished geometers in Europe.

Porism was also used by the Greek geometers to denote a corollary to a proposition, and the word in this sense, as well as in the other, by Pappus and Proclus, has occasioned much confusion. Proclus says that 'corollary is one of the geometrical appellations, but it has a twofold signification,' and he proceeds to describe, in a very obscure manner, the difference between the two meanings of the term.

See Proclus in Euclidem, edit. Hettich, fol. Basile, 1533, fol. 18. We refer the reader also to Henry Savile's Preface to his Euclid, 4to. Oxon, 1621, p. 18; and Trail's Life of Simson, p. 92.

PORITES. [MADREPORAM.] PORODRAGUS. De Montfort's name for a genus of Belemnites, and characterised by a swollen apex, and being straightened near the base.

PORPHYRY. [RALLIDE.] PORPHYRY was a native of Syria, either at Tyre, whence he is called Tyrius, or at Batanea (Basan), a town of Syria, whence he is called Bataneotes. His original name was Melech, the Hebrew and Syriac for king, a circumstance whichoccasioned Syrius to say that the name had been changed. His preceptor Longinus changed his Syriac name into Porphyrius (a man 'in purple,' the adornment of a king). While he was yet a boy, he repaired to Origen, the famous Christian writer, who was then probably living at Caesarea in Palestine, certainly not at his native city...
Alexandria, as Holstenius represents, following Vincent of
Lerins. Whether Porphyry became the pupil of Origen, or how
long he continued with him, is uncertain. He after-
wards went to Athens, where for some time he studied
under Longinus, the celebrated philosopher and critic. We
find him next at Rome, where, in the tenth year of his age
he was a scholar of Plotinus, whose Life he has written,
and in it he has stated some particulars concerning himself.
After a few years he went to Lilybaum in Sicily, and dwelt
there till after the death of Plotinus, a.d. 270, whence he
is sometimes called Siculus. Here, according to Eusebius
and Jerome, he composed his fifteen books against the
Christians; but these books do not now exist. Among his
works, with more zeal than wisdom, was a book prefixed
to the Emperor Theodosius. Porphyry died at Rome, towards the end of Diocletian’s reign, about
A.D. 304.

Porphyry has been variously called "the philosopher," He
distinguished himself as an acute and learned man, and
wrote in the Greek language upon a great variety of
subjects, in a simple and graceful style. It is to be lamented
that he employed his talents in opposing Christianity; but
it was mistaken policy to destroy any of his writings. Chris-
tians of modern times would have been able to turn the
arguments of Porphyry to good account in further establish-
ing the truth of their religion. Fabricius has given a list
of Porphyry’s works, dividing them into three classes, published, unpublished, and lost: the last class
contains of forty-three distinct performances. A neat
edition of his "Life of Pythagoras" and three other works
was published at Cambridge in 1645, with the Disseration
of the Porphyry’s Life and works by Edward Lhwyd.
Others of his works have been printed at different times;
but no complete edition of all that are extant has
yet appeared. The four books On Abstinence from Animal
Food (Suidas, etc.) are one of Porphyry’s best works, and contain a great deal of curious matter
applicable to illustrate the history of philosophy. His
Introduction to the Categories of Aristotle, which is a
masterly work, is prefixed to the various editions of
Aristotle’s "Organon." He wrote also a "Commentary on the Catego-
ries of Aristotle" in question and answer, which was edited
by Bogard, 1543, 4to. The Commentary of Porphyry
on the "Harmonics" of Ptolemy is printed in the collection
of Wallis: unfortunately, only the first book and the first
seven chapters of the second are extant.

One of the works of Porphyry, and a fragment of another
enumerated among the lost, were discovered by Mai, in the
Annals of the Etruscans, in the town of Sublicius.
Porphyry was born at Rome, about 233 B.C., and died
1861. The former is styled "Ad Marcellum." It seems
that Porphyry had married Marcella, the widow of a friend
who was a Christian, and that at the end of ten months,
upon the death of her husband, he added her to his work.
The fragment, which is in verse, belongs to a work in ten
books, known by the name of "De Philosophia ex Oraculis
Libri." (Sidonia, Lexicon; Holstenius, De Vitæ et Scriptior
Porphyrii Dissertatio; Fabricius, Bibl. Graecæ; British
Critic, vol. i., 1829.)

PORPHYRY. A large number of rocks of igneous origin,
both very ancient and comparatively modern, are thus design-
ated, yet this use of the term is neither accurate nor con-
venient. Properly speaking, a particular structure is indi-
cated by it, and not a definite rock or family of rocks.
Felspar of a granular texture, without crystals imbedded, is
called "felspar," but felspar with imbedded crystals is
porphyry; hornblende mixed with uncrystallized felspar makes
some greenstones; with imbedded crystals of felspar this
becomes greenstone-porphyry. Hence, by this mode of
designation, we have paleolithic-porphyry, greenstone-por-
phyry, basaltic-porphyry, felspar-porphyry, and even so
gamble a term as trap-porphyry; and, on the other hand, more
correctly, porphyritic pietrolith, porphyritic claystone, por-
phyritic greenstone, porphyritic basalt, and porphyritic granite.

Among volcanic rocks porphyry-trachytes are common.
Fine examples of porphyry (crystals of felspar in a base of
uncrystallized felspar) occur in Scotland at Inversnait
and in Ben Nevis. In Cumberland, in the Arnside Fell, and in
Cornwall, commonly under the title of Etrurite.

PORRIGO, Ringworm, is a puzzling and contagious
disease of the scalp, or, in some rare cases, of other parts
where there is much hair. M. Betti describes two varieties
of it under the names of P. favosa and P. scabulata. Dr.
Willan described many more varieties, but he included in
this name other widely different diseases.

Porrigio favosus consists of an eruption of small flat yellow
pustules, with depressions at their centres, distinct or clus-
tered, sometimes white, sometimes brown, or at times
imbedded, and with a depression in the middle. A similar
condition of the centres of each pustule is usually still visible.
After some time the scabs become thick and white; and drying,
split and break, however, the remaining lower part of
the skin, beneath the crust, is usually ulcerating, and the dis-
charge oozing through it. The hair of the parts affected
is always much loosened, and often falls off spontaneously;
but, when it grows again, is weaker and lighter in colour
than before.

Porrigio favosus appears rarely in any part except the
scalp. It affects persons of all ages; but especially children
from six to ten years old, and those who are naturally un-
healthy, or ill-fated and dirty. It is distinctly communicable
by contagion, and by this means may affect aike the weak
and the robust.

It is one of the most obstinate diseases of the skin, and
often lasts for months or years. The first measure for its
cure is to cleanse the head completely with pulvotes or soap
and water, and to have the hair cut very close. The dead
hair and scabs must then be cleaned off as fast as they
are produced, and the open surfaces of the head and scalp treated
with sulphuret of potash or slightly acidulated, or with
alacis or their carbonates, such as in the following forms:
ten grains of potassa fusa in an ounce of water, to be
applied occasionally; one or two drops of subcarbonate
of potash, every second or third day; or a solution, in
linen; or from one to three drachms of sulphuret of potash to
a pint of water; or from ten to twenty drops of any of the
mineral seeds to a pint of water, also to be constantly applied.
Lotions also of sulphate of copper, nitrates of silver, and of
nearly all the stimulant and astringent salts, have been
employed, and sometimes with success; and in most cases
of the disease all these will have to be tried in turn, till one,
being the most efficacious, will be continued, or at least com-
pleted, or till it has ceased to do good, when it must be
changed for another. Internal medicines must be employed
if there be any symptoms indicating their necessity; but
generally they are useless.

Porrigio scabulati, which is more commonly termed ring-
worm than the preceding, appears in the form of circular
red patches, with numerous minute yellow pustules with
depressed centres, out of which a hair usually projects, and
which is generally termed "head-lice." The hair in the
patches dries up soon after they are formed, and, by
coalescing, they produce a scab over the whole diseased sur-
face. Subsequently successive crops of new pustules form
around the old and drain the head of its fluids. The disease is
sometimes spread over the great part of the scalp by the
meeting and coalescing of the patches, which were at first isolated.
The hair usually falls off from the part affected, or is so loosened that it may be
pulled out without pain.

This form of porrigio sometimes appears spontaneously in
poor and dirty children, but it is usually produced by con-
tagion. The suggestions for its treatment must be the same
as for Porrigio favosus.

PORSENA, or Porssena, a Lar (or mighty lord) of
the Etruscan town of Clusium, with whom we are made ac-
quainted in the early history of Rome. When the Tarquins,
who had been driven from the city of Rome, had been
beaten and driven back from the fields of Lake Trasimenon
(Pontes Sublicius) was entrusted to Horatius Coles,
who bade his companions retreat across the bridge
and break down the part behind him, while he resisted the
enemies on the bank of the Tiber. The bridge was im-
perially laid siege to, and when the bridge was broken down, Horat-
ious, after having prayed to father Tiberius, threw himself
into the water, and swam across amidst the darts of the
enemy. Porssena, having failed in his attack, laid siege
to the city, garrisoned the Janiculum, and pitched his camp on the banks of the river. The Romans at first kept within the city, and drove all their cattle within the walls. But the consuls P. Valerius and T. Lucretius devised a stratagem by which the Etruscans were drawn into a snare and surprised. They ordered Mucius to restore the public goods which had been taken from them, and suffered from famine. A Roman youth of noble birth, C. Mucius, who was indignant at the sufferings of his countrymen, went, with the approbation of the senate, across the Tiber to the Etruscan camp, easily disguised and armed with a dagger, he found his way into the tent of Porson, but mistaking the secretary of the king for the king himself, he killed him. Being seized by the king's attendants, he frankly declared his intentions, and asked that he might be slain on the spot, and thus end his life. Upon this the king threatened to burn him alive, unless he revealed his associates. But Mucius, to show to the king that he did not fear bodily suffering, thrust his right hand into a fire which happened to be burning upon an altar. The king, admiring the intrepidity of the young man, ordered him to be removed from the altar, and gave him his liberty. Mucius then told the king that there were three hundred male Romans who had bound themselves by an oath to kill him, and that it had been his lot to make the first attempt. Upon this Porson offered peace to the Romans on condition that they should give back the Vestinientes territory; the Janiculum being a part of it. Porson, who had desired to dwell in the territory of the Vestinientes, consented to transfer it to Porson, returned to Clusium, leaving to the garrisoned Romans his well-stored camp.

The inconsistencies and inaccuracies of this story have been pointed out by Beaufort and Niebuhr. We have before us a fertile fancy of Sumner, an imaginative writer something suggestive of the romances of the real course of events so much disfigured in the narrative of Livy. Tacitus (Hist., iii. 72) says that the city was taken by Porson, a fact which at once throws light upon the whole transaction. From Pliny (Hist. Nat., xxxiv. 39) we learn that the Romans were prohibited by Porson from using iron for any other purpose than agriculture; and another proof of the entire submission of the Latins to Porson is recorded in this very passage (ibid., xxxiv. 39) that the senate sent to him an ivory throne and other insignia of royalty. These circumstances place it beyond doubt that for a time the Etruscan king was master of Rome. In the Roman tradition this is entirely distorted, and the whole affair between the Romans and Porson is misrepresented as a series of generous and manumissive acts on both sides.

After Porson had left Rome with his hostages, consisting of all the young youths, Chelonia, and of the maidens, effected her escape at the head of her female companions. The Romans, faithful to their treaty, sent her back, but the king, so less generous than the Romans, not only refused to return the hostages, but deprived many of his own young male prisoners of all those whom she might wish to restore to freedom. The accounts in Dionysius (v. 33), Plutarch (Vulp. 19), and Pliny (Hist. Nat., xxxiv. 13), are somewhat inconsistent with each other. After his return to Clusium, continues the legend, Porson sent his son Aruns with an army against Atricia, on the principal town of Latium, that it might not appear as if his former campaign had been entirely useless. The fact however seems to be, that in possession of Rome, he wished to make himself master of all Latium. The Atricienses were at first dismayed, but they asked and obtained aid from other Latin towns, and from Cumna in Campania, and thus gaining fresh courage, prepared to defend their city. The first attempt of the Etruscans was so violent that the Atricienses themselves were put to flight; the Cumnians however attacked the enemy from behind, and defeated him. Aruns fell, and with him was taken great part of his army, who escaped and sought a refuge at Rome, where they were kindly received, and a district (Vicus Tusus) was assigned to those who wished to settle there. It was not until this event that Porson, according to the legend, set his face against Rome, and resolved to enslave his country. But receiving for answer, that the liberty which Rome had once gained could only cease with the existence of the city, and that she would throw open her gates rather to an enemy than to a conqueror, he did not urge his demand, sent back those hostages who were still in his possession, and restored to the Romans the district of the Veientes, which had been taken from them by the treaty of the Janiculum. The peace between Porson and the Romans was never interrupted, and from this moment we lose sight of the Etruscan king in the history of Rome. It is highly probable that he retained the sovereignty of Rome till the defeat at Aricia, when the Romans seem to have regained their independence. It must therefore have been after this event that the prophecies regarding Mucius were publicly sold. This sale gave rise to the symbolic custom of selling the goods of King Porson, which continued down to the time of Livy (v. 14).

Porson was probably a fabulous hero of the Etruscans, belonging to an age much anterior to any of which we have historical records. The Roman legends however have interwoven his name with the war against the Etruscans which the Tarquins are said to have caused soon after their return from the Illyrian expedition. These episodes may be concluded from the fabulous account of his monument, a building as inconceivable as any described in 'The Arabian Nights.' (Niebuhr, Hist. of Rome, i., note 405, compared with p. 55.)

PORSON, RICHARD, was born at East Ruston, Norfolk, on the 23rd of December, 1759. His father, Mr. Huggin Porson, was the parish-clerk of his native place, taught him reading and writing at the same time, by drawing letters on a board or on the sand, and making the boy pronounce the corresponding sound and imitate the figure which expressed it. He also taught him to solve questions of arithmetic from a copy-book, and thus laid the foundation of that extraordinary ability for which Porson was afterwards so celebrated. At nine years of age Richard Porson was sent, together with his younger brother Thomas, to the village school, kept by Mr. voters, the father of John Finley, who had been for some time in Italy, and had received gratuitous instruction in Greek and Latin for about two years, and the progress of the elder brother was so astonishingly rapid that he was mentioned to all the neighboring gentry, by which means Mr. Norris of Grosvener Place, was induced to send for Richard Porson, and after examining him in the closet and most rigorous manner, very liberally sent him to Eton, where he was placed on the foundation, at his own expense, in August, 1774. Porson was then in his fifteenth year, and he remained at Eton just three years, respected and admired by all who knew him. The death of his patron Mr. Norris fortunately did not affect his prospects: for Sir George Baker, the eminent lawyer, being desirous of sending a son to Eton, as benefactor, collected a small income for him, which enabled him to continue at Eton, and he was afterwards sent to Trinity College, Cambridge, under the same kind patronage, which he received in 1777. According to Mr. Baker, the College, Porson knew little Greek when he went to Eton, and his compositions while at that school, though very correct, fell far short of excellence, and were very inferior to those of several of his contemporaries already at Cambridge, who remained high in the school as he could be, but he was not elected to King's College, Cambridge. However, when he left Eton, contributions were readily supplied by Etonians in aid of Sir George Baker's proposal to secure the funds for his maintenance at the University. (Minutes of Evidence before Select Committee on Education of Lower Orders, 1818.) At Cambridge he maintained and increased...
the reputation which he brought with him from Eton.

In 1761 he was elected to a university scholarship on Lord Craven's foundation, one of the greatest honours within the reach of an undergraduate; and on taking his degree in 1764, he was third senior optime in mathematics and senior medallist in the classical competition which followed. He was elected a fellow of his college in October, 1762, being one of the very first who ever obtained that distinction. About two years earlier he had fallen in love with a Miss S. W., who felt with regard to the subscription of the Thirty-nine Articles deterred him from taking orders, and, according to the rules of the college, he consequently vacated his fellowship in 1791, and was thus again left unprovided for. His friends however again came forward to support him, and in 1793 he was elected Regius Professor of Greek in the university of Cambridge; the small salary attached to this office, and an annuity of 100l. for life, which Mr. Cracherode and some other liberal friends had purchased for him, removed him from the pressure of immediate want, and it is thought that he would have added to his income by delivering lectures to the university had there not been some obstacle to his obtaining rooms in Trinity College, where he wished to reside.

In 1795 Porson married Mrs. Lunan, a sister of Mr. Perry, editor of the 'Morning Chronicle.' Unfortunately this lady died about two years after, and the effect of her loss upon Porson was profound. He have professed views of indifference to which, as is too notorious, this great scholar was much addicted in the latter part of his life. Mr. Perry however continued to be the warmest friend that Porson possessed. He has most heartily expressed his regret that he was not in a position to support him, either at the 'Morning Chronicle' office or at Mr. Perry's country-house at Merton.

On the establishment of the London Institution, Porson was appointed head librarian at that establishment, with a salary of 400l. a year, and was of great service in selecting a classical library. It was not however a sufficiently wide sphere of action for such a man as Porson, and it is to be regretted that he was employed in a public situation so unlike to his abilities, and likely to have called forth the energies of his mind. During the last years of his life he suffered much under a complication of disorders, produced partly by his irregular habits, and partly by his aversion to medical advice. In 1808 his prevailing disorder was asthma, which was succeeded by intermittent fever. On Monday, the 19th of September, he was attacked by apoplexy, in the street, and he had another attack on the following day. He lingered till the Sunday following (24th September, 1809) when he expired. His remains were conveyed to Cambridge, and solemnly interred in the antechapel of Trinity College, where a monument has been raised to his memory, and a room has been opened.

Richard Porson was one of the profoundest Greek scholars, certainly the greatest verbal critic, that any age or country has produced. He possessed every quality which is considered necessary to the formation of a classical scholar. A student of the classics with the greatest possible application, great acuteness, strong sound sense, and a lively perception both of the beautiful and of the ridiculous. Besides these qualifications, he enjoyed the rare faculty of guessing or conjecturing, from the imperfect date of corrupt readings, the very words of the author whose text he sought to restore; in this last particular we know of no one, with the single exception of Bentley, who can be named in comparison with him; and in some points he could not hesitate to place himself in the great Aristarchus of criticism. It is a common mistake to suppose that Porson's reading was confined to the Greek poets, or did not extend much beyond the ordinary range of cultivated reading. Any one who has read the works of any classical author whom he had not read, and we are confident that he was familiar with the whole mass of Greek literature. We have looked through the editions of Greek books which belonged to him, and which are now in the hands of different individuals and are scattered in libraries, and we are almost certain that no one will fail to find some trace of his careful and critical perusal. He was besides an excellent French scholar, and was well versed in the literature of his own country. His English style was terse and elegant, and his 'Letters to Travis' convinces us that he would have held a high place among English writers if he had directed his attention to the more popular branch of literature. From some traces which we have observed here and there, we are disposed to believe that Porson would have been a great general philologist had he lived some years later, and had an opportunity of turning his attention to the literature of the future. When he paid attention to ancient Greek poetry it was, he paid some attention to Anglo-Saxon, and it was perhaps only from want of means that he did not apply himself to a wider range of comparative philology. The great complaint which we have to make against Porson is, that he was so narrow, so restricted, so confined in his views. With the exception of reviews and other fugitive essays, he published nothing himself besides the 'Letters to Travis,' just mentioned, and a critical edition of four plays of Euripides. His edition of the lexicon of Phoebus (Porson's edition of 'Adversaria') were published after his death. Perhaps however we should have no right to complain of this, if it were not for the consequences which have sprung from it. Porson's great reputation during his lifetime covered all the promising young scholars of the time into servile imitators of the great critic, and the 'Possonian school of critics,' as they have been termed, threw many impediments in the way of sound and comprehensive scholarship. Every one of his contemporaries has inveighed against this close and narrow imitation of Porson; and that it would have been better if his successors had endeavoured rather to do what he omitted to do, but might have done, than to confine themselves to the narrow limits of his actual performances.

PORT GLASGOW. [GLASGOW.]
PORT LOUIS. [MORBIHAN.]
PORT ROYAL. [JAMAICA.]
PORT ROYAL DES CHAMPS, a celebrated convent of nuns, which was situated not far from Versailles, on the left of the high road leading from Rambouillet to Chartres. The site of the convent is a deep vale, enclosed by hills. In the antient charters the place is called Porrigium, Porreagum, Portus Regius, Porrois, and Porréal. The name dates from the time of Philippe Auguste, about the beginning of the thirteenth century, who having once lost his way, while hunting, found in this sequestered valley a shelter; 'port,' for himself and his attendants. The monastery was founded about 1204, with a donation made by Matthieu de Forcada, St. Bernard, of the Abbey of St. Marc; and a donation of Montmorency, it was transferred to the Order of St. Bernard by the Holy See, in 1109. The nuns were of the order of St. Bernard, and had their own abbess. In 1223 the pope conferred on the convent the right of conferring an asylum to such lay personages as, being disgusted with the world, and being poor, were not able to go into a monastic seclusion without binding themselves by perpetual vows. By a papal bull, the nuns had the right of choosing their abbess without any interference on the part of the bishop of the diocese.

The important period of the history of Port Royal begins with the appointment of Angelica Arnauld, sister of the famous controversialist Antoine Arnauld. Angelica was a woman of an active and prompt mind, and, through an instinct or desire to be codirectrix of the abbess Jeannette de Bouhaute, about the year 1660. In 1602 Bouhaute died, and Angelica, then not quite eleven years old, was consecrated abbess. She began by an exercise of her office by the older nuns. As she grew to womanhood, she continued the plan of a reform in the discipline of the convent, which had grown rather loose, and she carried it into execution. The leading features of this reform were a community of goods, the abolition of all privileges, whether of rank or age, and the exercise of penitential mortification.

In 1626 Angelica removed with her nuns to a house in the Faubourg St. Jacques at Paris, on account of an outbreak of plague which happened at Port Royal des Champs, and which was attributed to the dampness and unhealthy situation of that district. In 1633 a new and more spacious house was purchased for the monastic establishment at Paris, in the Rue St. Bouluire, near the Rue Comédie, and the church was consecrated by the Archbishop of Paris with great solemnity.
The new convent was called Port Royal de Paris. The building of Port Royal des Champs, which continued to belong to the same monastic institution, was occupied afterwards by several priests and learned men who wished to live a seceded life according to the spirit of the papal bull of 1517, 1. They were stripped of all their rights and titles by the government of France, and the convent was given to Port Royal de Paris, and the former building was levelled with the ground, by order of Louis XIV., as a nest of Jansenists and heretics. Gregoire has written a work styled "Les Ruines de l'Ordre des Jesuites," in which he describes the present appearance of the place. Dacier, Racine, Clémenceot, Du Fossé, and others have written Histories of Port Royal. Dr. Reuchlin has lately published an elaborate "Geschichte von Port Royal," Hamburg, 1839.

The most distinguished of the Jesuits associated with Port Royal were—Claude Lancelot, born at Paris in 1615. He was a disciple of Du Vergier d'Hauranne, came to Port Royal in 1638, and was one of the founders and promoters of the school. After its dispersion, Lancelot acted as preceptor to several young noblemen in succession; he afterwards retired to the convent of St. Cyran, which being suppressed in 1678, on suspicion of Jansenism, Lancelot was sent into exile at Quimperle, where he died in 1695. Goujet, in his edition of the "Memoires de St. Cyran, par Lancelot," gives a biographical notice of the latter, and a list of his works. 2. Louis Isaac le Maestre de Sacy was also a disciple of Du Vergier d'Hauranne, and worse fate had deferred to Port Royal, where he became spiritual director to the nuns, and gave up his property to the monastery. In 1661 he retired to Paris with his friends Nicolas Fontaine and Thomas Du Fossé. In 1668 they were all three arrested, destitute and confined in the Bastille, where they made three years. During his confinement he began his translation of the Bible: "La Sainte Bible," in Latin and French, with explanations, which was completed after his death by Du Fossé. He also translated the Iliad and the Odyssey into French, and wrote other works in French, both in prose and verse. He returned to Port Royal in 1675, but was ordered by the government to quit it in 1679, when he went to live in the house of the cardinals of Paris, where he remained until his death in 1684. His brother Antoine le Maestre had died before him at Port Royal des Champs. He wrote several controversial works. 3. Pierre Nicole, born at Chartres in 1625, studied at Paris, and afterwards became one of the professors in the school of Port Royal. In 1653 he returned to Paris, where he contributed to Pascal's work, "Les Lettres Provinciales." [Pascal.] Persecuted on the score of Jansenism, he took refuge in Belgium, but afterwards returned to Paris, where he was finally expelled by the government, which established his reputation as a writer and as a moralist. He also published—1, "Epigrammatum Delectus ex omnibus tum veteribus tum recentioribus Poeticis," Paris, 1656; 2, "La Foi et sa fonction dans l'Église, ou les Prêtres du temps présent touchant 'l'Eucharistie,' 1664, against Claude, the Calvinist divine; 3, 'De l'Unité de l'Eglise,' being a refutation of Jurieu, another Calvinist divine; 4, 'Études de Morale et Instruc tions Théologiques,' and other religious works.

PORT, a Portuguese wine, the produce of the vineyards of the Upper Douro. For several centuries, and more particularly after the Conquest, the wines of France were almost the only kinds imported into England. In 1669 the consumption of these wines in England amounted to two-fifths of the whole quantity imported, the duty at that time being the same on the wines of France and Portugal. A distinction was made in the duties in 1693, and a higher duty was levied on French wines. When the duty on French wines was again increased, and they were charged at the rate of 41/2d. per gallon, while the duty on Portuguese wine was only 1s. 6d. In 1733 a treaty between England and Portugal was negotiated by Mr. Methuen, by which we engaged to admit Portuguese wines at a duty of one-third less than that on French wines, Portugal being bound to receive English manufactured goods at one-half the duty which was payable upon these imports from other countries. From this time the fiscal difference of the tariff has been at all times so great, often amounting to 100 per cent., as completely to alter the national taste, and the wines of the Upper Douro have been those chiefly consumed in England. From 1707 to 1779, the consumption of English and Portuguese wines imported was 5 per cent. of the former, and 95 per cent. of the latter. In 1784, of the total quantity of every description of wine imported, the proportion was 80 per cent. of Portuguese wines, and 20 per cent.
of those from all other countries: in 1790 the proportion continued much the same, being 77 per cent. and 23 per cent., and of the latter proportion 18 parts out of 23 consisted of Spanish wines. The Portuguese monopolists of course treated their customers charging an extravagant price for their wines, and attending but little to the improvement of their quality. On the establishment of the Oporto Wine Company in 1754, the extent of the vineyards was diminished with a view of making the most of their privileges at the least possible trouble. To this system England submitted until within a comparatively recent period. In 1783 Portugal agreed to admit other articles coming from England besides her manufactured goods of one-half per cent. less than was paid by other countries; but England was the only customer for Portuguese wines, and, with the exception of Brazil, they scarcely found their way into any other country. The following table, exhibiting the total quantity of wine exported by the Oporto Company, distinguishing the quantity sent to England, is given on the authority of a note in No. 3 of the 'Foreign Quarterly Review':—

<table>
<thead>
<tr>
<th>Years</th>
<th>Total Quantity</th>
<th>To England</th>
</tr>
</thead>
<tbody>
<tr>
<td>1818</td>
<td>32,843 pipes</td>
<td>32,465 pipes</td>
</tr>
<tr>
<td>1822</td>
<td>27,738</td>
<td>27,476</td>
</tr>
<tr>
<td>1825</td>
<td>40,324</td>
<td>40,277</td>
</tr>
<tr>
<td>1828</td>
<td>18,310</td>
<td>17,204</td>
</tr>
</tbody>
</table>

The natural taste and quality of the wines of the Upper Douro are unknown in England, and probably would not be relished. They are strongly flavoured for the English market, and require to be kept some years in the wood and in bottle before they attain the qualities which render port wine grateful to the wine-drinkers in England.

In 1819 a reduction was wisely made in the duty on French wines, with the best effects upon the revenue, besides the advantage of promoting a commercial intercourse with France; and in 1831 this improvement in our commercial policy was followed by an act equalising the duty on all foreign wines. This has induced Portugal to revive her tariff, and the imports from England are now placed upon a footing as those from other countries. The change was made in April, 1834, and an account of it is given in a parliamentary paper printed in the same year (No. 318). In the following month the privileges of the Oporto Wine Company were abolished; but they have since been restored. At all events the wine-trade with Portugal does not now depend upon high duties directed against the wines of other countries, although it will for a long period be sustained by the taste which they have in England.

The consumption of French wine will probably increase, and the new commercial treaty with France, which Mr. Porter, of the Board of Trade, proceeded to Paris with full powers to sign during the present month (September), will probably have a beneficial effect upon the trade of the two countries. The following tables exhibit the extent of the wine-trade with Portugal during the last twenty years:

1. Quantities of wine annually imported into the United Kingdom from Portugal, on an average of each of the five years ending 1824, 1825, 1834, and 1839; also quantities of the same exported from the United Kingdom for the same periods:

<table>
<thead>
<tr>
<th>Average of Years</th>
<th>Imported</th>
<th>Exported</th>
</tr>
</thead>
<tbody>
<tr>
<td>1820-1823</td>
<td>2,825,021 galls</td>
<td>205,729 galls</td>
</tr>
<tr>
<td>1824-1826</td>
<td>3,355,292</td>
<td>240,933</td>
</tr>
<tr>
<td>1827-1829</td>
<td>2,784,584</td>
<td>215,185</td>
</tr>
<tr>
<td>1830-1832</td>
<td>3,491,684</td>
<td>320,017</td>
</tr>
</tbody>
</table>

2. Duties: Years in which alterations were made in the wines of Portugal, French, and Spanish wines, and rate of the same per gallon:

<table>
<thead>
<tr>
<th>Years</th>
<th>Duties</th>
<th>Portugeuse</th>
<th>Spanish</th>
<th>French</th>
</tr>
</thead>
<tbody>
<tr>
<td>1820</td>
<td>9½</td>
<td>10</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>1822</td>
<td>4½</td>
<td>10</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>1828</td>
<td>6½</td>
<td>10</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>1831</td>
<td>5½</td>
<td>10</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

3. Proportion per cent. of the consumption of the principal kinds of wine consumed in the United Kingdom at different periods:

<table>
<thead>
<tr>
<th>Years</th>
<th>Portugeuse</th>
<th>Spanish</th>
<th>French</th>
</tr>
</thead>
<tbody>
<tr>
<td>1820-1824</td>
<td>50%</td>
<td>21%</td>
<td>3%</td>
</tr>
<tr>
<td>1825-1830</td>
<td>47%</td>
<td>25%</td>
<td>7%</td>
</tr>
<tr>
<td>1831 and 1832</td>
<td>43%</td>
<td>3%</td>
<td>7%</td>
</tr>
<tr>
<td>1835 and 1839</td>
<td>41%</td>
<td>35%</td>
<td>6%</td>
</tr>
</tbody>
</table>

The consumption of wine is less than it was half a century ago, notwithstanding the increase of the population in wealth and numbers [Wine-Trade]. This has not arisen from the increased consumption of malt liquors [Malt], but from the great increase in the use of British spirits. [Spirits-Trade].

4. Quantities of Portuguese wines retained for home consumption in each of the following years, showing the proportion per cent. to the total quantity of all kinds on which duties were paid for consumption:

<table>
<thead>
<tr>
<th>Years</th>
<th>Gallons</th>
<th>Proportion per Cent.</th>
<th>Years</th>
<th>Gallons</th>
<th>Proportion per Cent.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1820</td>
<td>2,361,461</td>
<td>51.4%</td>
<td>1830</td>
<td>2,669,608</td>
<td>44.3%</td>
</tr>
<tr>
<td>1821</td>
<td>2,343,099</td>
<td>50.0%</td>
<td>1831</td>
<td>2,707,734</td>
<td>43.6%</td>
</tr>
<tr>
<td>1822</td>
<td>2,375,213</td>
<td>51.3%</td>
<td>1823</td>
<td>2,617,405</td>
<td>46.7%</td>
</tr>
<tr>
<td>1824</td>
<td>2,492,212</td>
<td>51.4%</td>
<td>1826</td>
<td>2,956,530</td>
<td>41.8%</td>
</tr>
<tr>
<td>1825</td>
<td>2,912,343</td>
<td>49.8%</td>
<td>1827</td>
<td>2,780,303</td>
<td>42.9%</td>
</tr>
<tr>
<td>1826</td>
<td>2,863,688</td>
<td>46.7%</td>
<td>1828</td>
<td>2,790,024</td>
<td>43.4%</td>
</tr>
<tr>
<td>1829</td>
<td>2,322,192</td>
<td>47.1%</td>
<td>1831</td>
<td>2,582,230</td>
<td>46.5%</td>
</tr>
<tr>
<td>1830</td>
<td>1,307,021</td>
<td>42.7%</td>
<td>1833</td>
<td>2,900,457</td>
<td>41.4%</td>
</tr>
<tr>
<td>1831</td>
<td>2,692,084</td>
<td>43.1%</td>
<td>1834</td>
<td>2,998,152</td>
<td>41.4%</td>
</tr>
</tbody>
</table>

Average 2,833,043 | 49.0% Average 2,768,892 | 43.0%

5. Quantities of Portuguese wines warehoused under bond in the United Kingdom on the 5th of January in each of the following years. It may be observed that the increased consumption may be solely occasioned by additional facilities for bonding:

<table>
<thead>
<tr>
<th>Port of London</th>
<th>Other Ports</th>
<th>Total</th>
<th>Total All Sorts</th>
</tr>
</thead>
<tbody>
<tr>
<td>1824</td>
<td>1,458,121</td>
<td>1,319,272</td>
<td>2,777,394</td>
</tr>
<tr>
<td>1825</td>
<td>906,223</td>
<td>1,127,515</td>
<td>2,033,738</td>
</tr>
<tr>
<td>1826</td>
<td>2,397,186</td>
<td>1,813,718</td>
<td>4,210,904</td>
</tr>
<tr>
<td>1827</td>
<td>2,062,735</td>
<td>2,081,165</td>
<td>4,943,800</td>
</tr>
<tr>
<td>1828</td>
<td>2,386,017</td>
<td>1,997,766</td>
<td>4,383,783</td>
</tr>
<tr>
<td>1829</td>
<td>1,984,398</td>
<td>2,137,531</td>
<td>4,121,930</td>
</tr>
</tbody>
</table>

PORTA, GIAMBATISSA, was born of an ancient and noble family at Naples, about the year 1585. He applied himself very early to the study of nature, and was deeply read in Aristotle, Phyl, and all the ancients who in any way treat of nature or describe the earth. It is said that at the age of fifteen he composed his first book of his ‘Natural Magic;’ but as he derived his opinions from such authors as Arnold de Villanova and Cardanus, he mixed up numerous fantastic and delusory notions with real discoveries, and was addicted to establishments of magic. He lived in Italy, France, and Spain, visiting all the libraries and learned men, and conversing with artists on matters relating to their several professions. His publications were manifold. A suspicion of his being addicted to unlawful superstitions, censure by some of his works, was however the cause of his falling under the censure of the court of Rome, which obliged him to appear there in person to justify his conduct and opinions. The result of the examination was the prohibition of the meeting of any more of the literary assemblies held at his house, on account of their being accused of having occasionally discussed the secrets of magic. This society was called ‘The Secret,’ and was accessible only to such as had made some new discoveries in physical science: even after its dissolution his house still continued to be the resort of literary men, both foreign and Neapolitans. He not only established private schools of particular sciences, but to the utmost of his power promoted public academies, and had no small share in establishing that of ‘Gli Ozioli’ at Naples. In his old age he composed dramas, both tragic and comic, which had some success at the time, but are now quite forgotten. He died, unmarried, at Naples, December 4, 1615, and was buried in a white marble chapel that he had built in the church of St. Laurence.

In spite of the strange and childish absurdities that abound in Porta's works, it cannot be denied that he was of greater service to physical science than perhaps any of his contemporaries. It is to him that we owe the invention of the camera obscura, and also of a great number of curious optical experiments. He has written much on the subject.
of plane, convex, and concave mirrors, and particularly on the burning-glass, which he flattered himself he could construct in such a manner as to be able to burn at any distance. The most important invention that has been attributed to him is that of the telescope, of which he has by some means acquired the secret. He accordingly published a passage in the tenth chapter of the seventeenth book of his 'Natural Magic;' but by the best judges this honour is still considered to be due to Galileo. [Galileo.]

The following is a list of his extant works:—
1. Perspective, 1640. ivto.; 2. Motorum, omne, ad Universalia Miraculum Naturalium, Libri Viii, 1640, fol.; 3. De Furttiva Literarum Notis, vulgo de Zifaris, Naples, 1553, 4to., several times reprinted, with the addition of a fifth book. This is said by M. Musset Pathay (Biblog. Agromonique, p. 51) to be the first work on meteorology in which any sound ideas are to be found. 4. His dramatic works consist of about one hundred and eighty tragedies, and a number of comedies. The comedies were collected into four volumes, 12mo, and published at Naples, 1726. All these works are analysed by H. Gab. Duchene, at the end of his Notice Historique sur J. B. Porta, Paris, 1801, 8vo. (Biog. Univ. et. Biogr. Méd.)

PORTAL VEIN. [LIVER.] PORTARLINGTON. [QUEEN'S COUNTY.]

PORTCULLIS, in fortification, is an assemblage of several large pieces of wood, joints, and levers, forming a kind of door, or barrier, like a harrow, and each pointed with iron at the bottom. They are sometimes hung over the gateways of old fortified towns, ready to let down in case of a surprise, when the gates could not be operated. In military works, a portcullis was used at a very early period, called it 'porte-coulant,' i.e. sliding gate, which is the true etymology of the word. 'Coulisse' is likewise used by the French writers for the portcullis, whereon our term is immediately derived.

PORTER, a kind of malt liquor, extensively consumed in London. The malt used for porter is high-dried; that is, it has been exposed to greater heat in the kiln than the pale malt used for ale or bitters. [BRASING. ] Porter was first brewed in 1722. The malt liquor used for the making of this brew consists of three kinds, ale, beer, and 'two-penny,' and a mixture of two of either of these kinds was a favourite beverage under the name of 'half and half;' or a mixture was drunk called 'porter and pale.' The porter of 1722 was made at a very early period, called it 'porte-coulant,' i.e. sliding gate, which is the true etymology of the word. 'Coulisse' is likewise used by the French writers for the portcullis, whereon our term is immediately derived.

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extent of its consumption must be taken with caution. The 
brewing of porter has not been very successfully practised 
in the country ['collections' in England; and the peculiar 
exclusiveness of 'London' porter results from the large 
scale on which all the processes connected with the 
brewing, particularly the vattting, are conducted, as well 
as the skill of the brewers. In Barclays's brewery there 
are about 4000 gallons, each year, containing 3000 
gallons. In London the brewing of porter is confined to 
the great brewers, the others being chiefly ale-brewers. 
At the largest brewery in London the proportion of porter 
brewed is between one-ninth and one-twelfth; and in three 
London breweries above one-half the malt 
consumed by brewers and victuallers in England is used, 
the proportion is probably one-sixth of the whole, or about 
one million bushels. This porter is not all consumed in 
London, but is sent to the north and west, and is also 
drained to the south and east, the latter being 
drained it not only in demand in every part of England, but 
also for export abroad. Allowing one-sixth for exportation, 
and for the provinces, the proportion of porter consumed 
in London will be about one-half of the whole quantity 
of malt liquor consumed. It is said that the taste of the public 
has a tendency to diminish this proportion. Porter is bottled 
in large quantities, both for home and foreign demand. The 
Railway Commissioners for Ireland remark, in their Second 
Report (1839), 'that Irish porter is now largely exported to 
England, and the Dublin bottled porter successfully rivals 
the London porter, even in London itself.'

PORTUS, BELBLY, an eminent English poet, was 
born in 1731. He was for several years at a 
small school in his native city, and when he was thir- 
ten years old he was removed to a school at Ripon. 
From this place he went at an earlier age than usual to 
Cambridge, where he was admitted a sizar of Chrish's Col- 
lege. His personal worth, united with his superior at- 
tainments, both classical and mathematical, soon procured 
him a fellowship in his College, and by the active exertions 
of his mind he was made professor of the University. 
This office he did not long retain, but he chose rather to 
give his undivided attention to private pupils. In 1757, 
at the age of twenty-six, he was ordained deacon, and soon 
after priest.

He first became known as a writer by obtaining Seaton's 
prize for the best English poem on a sacred subject. On 
this occasion the subject was 'Death,' and the production 
of Mr. Porteus was universally deemed one of great merit. 
In 1762 he was made chaplain to archbishop Secker. His 
first preferments were two small livings in Kent, which 
he soon resigned, and took the rectory of Hunton in the 
same county. He was next appointed prebendary of Peter- 
borough, and afterwards a precentor of St. Paul's. He 
became rector of Lambeth in 1771. In the same year he 
took the degree of D.D. at Cambridge, and in 1769 was made 
chaplain to king George III., and master of the hospital of St. Cross near Oxford.

In 1773, Dr. Porteus, with a few other clergyman, 
apted to the bishops, requesting that they would review the 
Liturgy and Articles for the purpose of making some slight 
alterations. In taking this step they proceeded in a tem- 
perate and respectful manner, and the answer declining 
to entertain the application, which archbishop Cornwallis 
returned in his own name and in that of the bench in general, 
was marked with great kindness. Dr. Porteus and his 
friends acquiesced in the decision of the bishops, and thus 
the affair ended.

In 1776, Dr. Porteus, without the least solicitation on his 
part, was made bishop of Chester; and in 1787, on the 
decath of Bishop Hensley, he was promoted to the archbishops 
of London, over which he very ably presided till his death. 
In 1798 he began a course of lectures on St. Matthew's 
Gospel, which he delivered at St. James's church on the 
Frideswide, which he afterwards published. These 
lectures have been perhaps the most popular of all his 
works. He died May 14th, 1808, in the seventy-eighth 
year of his age. Though bishop Porteus cannot be called a 
pilgrim, nor erudite, he was yet a profound student, a 
learned and able; and he pursued through life a steady 
pause of pious exertion for the benefit of his fellow-crea- 
tures, which procured him a high reputation among 
men of all denominations, consisting of Mons and tracts, 
with 'Life of Archbishop Secker,' the Poems and lectures 
already mentioned, were collected and published in 1811, in 
five vols. 8vo., with his Life, making another 
volume, by his nephew, the Rev. Robert Hodgson, now 
Dr. Hodgson, dean of Carlisle. [Life, as above; Chalmers's 
Biographical Dictionary.]

PORTICO. Originally applied without distinction to 
colonnelades and covered ambulatories, the term is now 
limited to signify a sheltered space enclosed by columns 
and roofs, and containing seats or seats. A portico 
roofed with a pediment, like the end or front of a Grecian 
temple. The term therefore, as now generally restricted, 
answers to the Pronos of such a temple. Porticoes 
are described according to their proportion. For 
viz. tetrastyle, hexastyle, octostyle, &C. [Civil Archi- 
itecture; Pantheon.] They are called prostyle when, 
as generally happens, they project from the main build- 
ing. Such as are in antis, and recessed within the wall, 
are called metaptales. The projects of the latter are in 
most cases, not only always employed in this particular 
sense, but it would be convenient if it were, as much 
ambiguity would thereby be prevented. Although, too, a 
loggia so far resembles any other colonnade, it differs 
from the other in being situated, like a portico, at the 
entrance and in the centre of a facade, whereas colonnades 
are usually lengthened ranges of columns in other situations; thus we 
find in six of the churches of the University of 
Oxford, the so-called Theatre, a portico metaptyli, 
where the pediment was called a prostyle, because, although a loggia in antis, it is sur- 
mounted by a pediment.

In even prostyle portico there is great difference of char- 
acter mostly in regards of the degree of projection given 
to them, independently of other circumstances; some are 
made to advance a single intercolumn, and others project 
con siderably more. At the risk therefore of appearing to 
innovate upon the terminology of architecture, we would 
propose the following terms: many cases of a 
portico projects only one intercolumn, as the Ionic hexastyle of St. 
Paneras church, London; diprostyle, where the projection 
is two intercolumns, as in the portico of St. Martin's, Charing- 
cross; trimprostyle, where the portico projects, 
three. When, however, the term 'portico, prostyle in antis, is converted into a hexastyle by 
placing six columns in such manner that the end ones come 
before the antae or pilasters. The front of the new 
Institution, Chancery-square, where the prostyle and 
metaptyli, because, although a loggia in antis, it is sur- 
mounted by a pediment.

Some porticoes again may be termed compound prostyle, 
when the antae are, in one case, considered as the prostyle, and the architecutral feature of the Bank which we shall presently notice can hardly 
be classed as a portico.

Some porticoes again may be termed compound prostyles, 
when the antae are, in one case, considered as the prostyles, and the architectural feature of the Bank which we shall presently notice can hardly be classed as a portico.
those in front (not arranged concentrically, but placed on the chord to the outer curve), produces an unusually rich and picturesque effect. Beautiful however as the semicircular form may be in all other respects, the character will be neutralised if the background or rear wall will be filled with doors and windows. Such is the case with the otherwise noble and classic portico of St. George’s, Bloomsbury, which has altogether, and in any sort of situation, lost that appearance and character which they might have produced if the columns were placed in front. The portico of St. Martin’s has fewer apertures, there being only three doors and the same number of windows above them, but they are of such horrible design as to be quite inconspicuous. The portico of the Old Base Court of St. Paul’s, when seen from the same distance, bears the same comparison to the rest, they cut up the background to the columns, and give it a character at variance with that professedly aimed at. It is on this account that the invariable example of the pedimented portico, to which the Institution looks like the façade of an Ionic temple in antis erected before a modern house-front. The Ionic hexastyle of the College of Physicians is not less faulty, having a door and four windows. The three doorways, while above them there is only a single window in the centre, and a niche corresponding with each of the extreme intercolumns. On the contrary, much of the nobleness of character and beauty of design for the portico of the transept of St. Paul’s, the Port-Offer of the Treasury, the Port-Offer of the National Gallery, and the Doric hexastyle in antis of the Con Exchange arise from the circumstance of their having no windows, and from their doors being made rich and important features. The three doorways, while above them there is only a hexastyle above them, or with the alternate ones of a more extended colonnade. We conceive too that in similar cases, super-columnation, or rather sub-columnation, might be well adopted to this purpose with propriety and effect; namely, by converting the insular arch or portico into colonnade, subdivide it into columns, and arrange the proportions, so as to produce a dialyte in antis, or three open intercolumns beneath the centre ones of a hexastyle, &c.

Although we do not exactly agree with those who would substitute a stylobate beneath a portico, but we should not so rigidly object to a series of other openings, whether arches or square-headed apertures between piers, provided they were confined to the centre, as for instance three open arches corresponding with the three middle intercolumns of a hexastyle above them, or with the alternate ones of a more extended colonnade. We conceive too that in similar cases, super-columnation, or rather sub-columnation, might be well adopted to this purpose with propriety and effect; namely, by converting the insular arch or portico into colonnade, subdivide it into columns, and arrange the proportions, so as to produce a dialyte in antis, or three open intercolumns beneath the centre ones of a hexastyle, &c.

Respecting the mere temple-porticoes of the ancients, or rather the external arrangement of columns in such edifices, there is nothing need be said here, because they offer very little more than slight variations of the same idea, and those are sufficiently explained in the article Civil Architecture. But we shall now briefly pass in review some of the porticoes of our own times and of our own country. The Library of the Flora Aegyptica, which is illustrated with several other original plans.
that most deserve notice on account of their plan, to which we shall confine our attention, passing over all other circumstances. We shall not therefore attend to the order of columns employed in them, nor take any account of their dimensions, the plans being drawn not to the same scale, but, for convenience sake, nearly to the same size. We commence with that of the Pantheon at Rome (Fig. 1), attached to a circular edifice [PANTHON], and which, as will instantly be seen, is decidedly different from the usual portico at the end or front of a temple, or from those monoprostyles, or single external line of columns, which constitute the generality of modern porticos.

Besides being tripoly, or having three open intercolumns on its flanks, it may be described as polystyle, having columns within, dividing it into three avenues or aisles, the centre one of which is extended by being considerably recessed, a circumstance that adds very greatly to the general effect.

As being, like the preceding, attached to a rotunda, we have selected for the next plan that of the church erected by Canova at Possagno (Fig. 2). This also is a polystyle, though altogether different in its arrangement from the other, there being here merely a second range of columns behind those in front, on which account it might be designated a double octostyle.

Although there are very few decaestyle porticos, it is not merely as an example of one that we here exhibit that of University College (Fig. 3), since it might have been such without being at all worthy of notice for its plan, as is the case with the dodecaestyle one of the Chamber of Deputies at Paris [PARIS], which is no more than a monopostyle, or single line of twelve columns, beneath a pediment. That of University College, on the contrary, projects forward very considerably, it being equal to a tripoly, or a pseudo-tripoly, with one intercolumn closed up, owing to which it appears internally to be partly recessed, to be carried out two intercolumns, and inwards for the space of one. This example is further remarkable on account of the unusual and highly picturesque arrangement of the steps forming the ascent up to it, which commence below on each side, while above they form a single broad flight, in such manner as to leave screened areas, a.a, which serve to admit light to the spaces in the basement beneath the portico.

The portico of the Glyptotheca at Munich (Fig. 4) [MUNICH] may be described as monopostyle, recessed, and polystyle, it being compounded of an octostyle advanced only one intercolumn before the rest of the front, and of a tetrapoly in antis behind it, forming five open intercolumns, the extent of the recessed part, by which means not only great richness of columnation, but a picturesque play and contrast are obtained.

Like that of University College, the portico of the National Gallery (Fig. 5) is pseudo-tripoly, consequently projects as much as three intercolumns from the building; but, in other respects, differs very materially from it, being only partially recessed in the centref, where are two columns forming a distyle in antis, the only instance among all our London porticos of one with any columns within it. It also differs from the other example altogether in the ar-

Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.
rangement of the steps leading up to it, relative to which some remarks have already been made.

The portico of the Pantheon at Paris (Fig. 6) offers a more singular than judicious arrangement; two columns being pro-

Fig. 6.

jected at each end so as to produce a group of three at the external angles, which, although by no means displeasing in the ground-plan, produces an awkward effect in the structure itself or an elevation of it; because, instead of being included beneath the pediment, those columns and their entablature form mere little jutting-out bits, attached to the flanks, and almost suggest the idea of its being originally intended to continue them as lateral colonnades parallel to the hexastyle beneath the pediment (as in the next figure). Though this portico is only hexastyle in front, and has only four columns within, there are eighteen altogether, besides the half and three-quarter columns attached to the wall behind, a number sufficient to have formed an octastyle triprostyle with six inner columns, via four disposed as in the portico of the Pantheon (Fig. 1), and two forming a pronao recess for the centre doorway, as in Fig. 5. Notwithstanding however the faults already adverted to, and that of its wide intercolumniation, compensated perhaps in some respect by the columns within the portico immediately behind them in front (but which defect might have been obviated by merely making an octastyle within the same space as the present hexastyle), notwithstanding these defects, there is very much to admire in this example, more especially when we compare it with preceding productions of the kind in modern times.

Our next example, which is the portico of the new Fitzwilliam Museum at Cambridge (Fig. 7), differs materially from the foregoing one, presenting a richer system of colomniation in some respects; for though, technically speaking, no more than a monoprostye octastyle is extended by lateral loggias, three intercolumns in width, and has besides considerable depth within. All that we object to is the substitution of engaged columns for anti or pilasters, which would not only have been more suitable, but have produced greater variety; nor can we help thinking it would have been very much better to have placed a square pillar instead of a column at the inner angles formed by the junction of the returns of the octastyle and the lateral colonnades; both because these last would have thereby been better defined to the eye, and the meeting entablature would have appeared to be more solidly supported than when, as now, resting upon a circular shaft. Very like this in plan is the portico of the Capitol at Washington, whose centre is also an octastyle, but each of the lateral colonnades has one Intercolumn more than those in the Cambridge building. Internally the disposition of the centre portion or octastyle resembles that of the Pantheon, shown in Fig. 1.

Although only a hexastyle, the portico of the Kazan Cathedral, St. Petersburg, towards the Nevsky Prospect, is an unusually rich example of a polystyle prostyle, and of certain peculiarities of arrangement which will be better understood from the plan itself (Fig. 8) than from any verbal explanation. The cut also shows a portion of the sweeping colonnades (in imitation of those by Bernini in the Piazza di San Pietro at Rome), and the mode in which they are connected, or rather not connected with, but merely brought up to the portico itself, which is so awkward and disagreeable as materially to detract from the effect of the whole.

On other poritco, which, whatever may be their denomination, or whatever their merits in point of style and execution, consist of no more than a single range of columns in front, we cannot stop to make any remarks, although several of them would furnish abundant matter for criticism, and among others that of Covent Garden Theatre, which, though generally received as such, is anything but a classical composition, the doorways being in the axis, more holes in the wall, and the windows above them destroying all architectural repose and breadth of effect. We cannot however pass over Mr. Gandy Deering's small Doric distyle in antis, in the front of the building originally erected in the Pimlico Proprietary School in Ebury Street (Fig. 9), since it claims to be brought forward by us as a solitary example of a portico with an inner screen carried up half way behind the columns, and with lateral openings at the ends of the portico between
small astas, a, a, &c., descending as low as the top of the screen, and two of them resting on its exterior ends. The idea is a valuable one, and admits of almost endless diversity and new combinations.

The only other example we shall offer is that of semi-circular, or rather segmental loggia, forming the north-west angle of the Bank of England (Fig. 10), the most tasteful and picturesque piece of design that Sir J. Soane ever produced.

The effect of the inner columns, the contrast they afford to the others, their shafts being plain, while the rest are all fluted, the varied perspective appearance accordingly as the spectator shifts his station, and the great play of light and shade, all render this little bit quite an architectural study.

<table>
<thead>
<tr>
<th>Class</th>
<th>Order</th>
<th>Building</th>
<th>Architect</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decastyle</td>
<td>&quot;</td>
<td>University College, London</td>
<td>Wilkins</td>
<td>Hyper-diprosty, recessed. Height of columns 36 feet.</td>
</tr>
<tr>
<td>Octastyle</td>
<td>&quot;</td>
<td>Pantheon, Rome</td>
<td>Wilkins</td>
<td>Hyper-triprosty. Poly sty. and recessed.</td>
</tr>
<tr>
<td>&quot;</td>
<td>&quot;</td>
<td>National Gallery, London</td>
<td>Wilkins</td>
<td>Hyper-diprosty, with distyle in anti, recess within.</td>
</tr>
<tr>
<td>&quot;</td>
<td>&quot;</td>
<td>Fitzwilliam Museum, Cambridge</td>
<td>Basevi</td>
<td>Monoprosty, recessed, and with order continued laterally, forming three intercolumns on each side.</td>
</tr>
<tr>
<td>&quot;</td>
<td>&quot;</td>
<td>Victoria Rooms, Bristol</td>
<td>Dyer</td>
<td>Unequal diprosty, recessed, five intercolumns.</td>
</tr>
<tr>
<td>&quot;</td>
<td>&quot;</td>
<td>Exchange, Glasgow</td>
<td>Hamilton</td>
<td>Diprosty, with two inner columns corresponding with second and seventh of the octastyle.</td>
</tr>
<tr>
<td>&quot;</td>
<td>&quot;</td>
<td>Buckingham Palace</td>
<td>Nash</td>
<td>Columns fluted, their height 26 feet.</td>
</tr>
<tr>
<td>Oecstatye</td>
<td>Pentorial</td>
<td>La Madeleine, Paris</td>
<td>Hanson &amp; Wilsh</td>
<td>Columns 36 feet high. Side elevations of twelve intercolumns on flanks.</td>
</tr>
<tr>
<td>&quot;</td>
<td>Doric</td>
<td>Girard College, Philadelphia</td>
<td>Hufé</td>
<td>See Paris.</td>
</tr>
<tr>
<td>&quot;</td>
<td>Doric</td>
<td>The Walhalla, Bavaria</td>
<td>Walter</td>
<td>Columns 55 feet high; marble.</td>
</tr>
<tr>
<td>&quot;</td>
<td>Doric</td>
<td>Glyptotheca, Munich</td>
<td>Klenze</td>
<td>Monoprosty, poly sty. and recessed, tetrastyle in anti.</td>
</tr>
<tr>
<td>&quot;</td>
<td>Doric</td>
<td>Great Theatre, Potsdam</td>
<td>Klenze</td>
<td>Monoprosty.</td>
</tr>
<tr>
<td>&quot;</td>
<td>Doric</td>
<td>Church at Possagno</td>
<td>Thomond</td>
<td>Diprosty, poly sty., double octastyle.</td>
</tr>
<tr>
<td>&quot;</td>
<td>Doric</td>
<td>Manago, Potsberg</td>
<td>Canova</td>
<td>Monoprosty, poly sty., recessed.</td>
</tr>
<tr>
<td>&quot;</td>
<td>Doric</td>
<td>Royal Institution, Edinburgh</td>
<td>Quarenghi</td>
<td>Diprosty, height of columns 34 feet.</td>
</tr>
<tr>
<td>Hexastyle</td>
<td>Corinth.</td>
<td>St. Martin’s, Charing-cross</td>
<td>Gibbs</td>
<td>Diprosty, five arched doors, and five arched windows above them.</td>
</tr>
<tr>
<td>&quot;</td>
<td>&quot;</td>
<td>St. George’s, Bloomsbury</td>
<td>Hawksmore</td>
<td>Monoprosty.</td>
</tr>
<tr>
<td>&quot;</td>
<td>&quot;</td>
<td>Law Courts, Dublin</td>
<td>J. James</td>
<td>Monoprosty.</td>
</tr>
<tr>
<td>&quot;</td>
<td>&quot;</td>
<td>Kazan Church, Petersburg</td>
<td>Cooley &amp; Gandon</td>
<td>Diprosty, poly sty., a triple hexastyle.</td>
</tr>
<tr>
<td>&quot;</td>
<td>&quot;</td>
<td>Pantheon, Paris</td>
<td>Vornikihin</td>
<td>Reliefs within portico, height of columns 62 feet.</td>
</tr>
<tr>
<td>&quot;</td>
<td>&quot;</td>
<td>Made de Idoio, Turin</td>
<td>Soufflot</td>
<td>A diprosty, attached to a rotunda. Two inner columns behind the penultimate ones in front.</td>
</tr>
<tr>
<td>&quot;</td>
<td>&quot;</td>
<td>Custom-house, New York</td>
<td>Buonsgnario</td>
<td>Monoprosty. White marble; columns 35 feet high.</td>
</tr>
<tr>
<td>&quot;</td>
<td>&quot;</td>
<td>St. Nicholas’s, Potsdam</td>
<td>W. Ross</td>
<td>Hyper-monoprosty.</td>
</tr>
<tr>
<td>&quot;</td>
<td>&quot;</td>
<td>Bethlehem Hospital, London</td>
<td>Lewis</td>
<td>Monoprosty; height of columns 36 feet.</td>
</tr>
<tr>
<td>&quot;</td>
<td>&quot;</td>
<td>Post-Office, London</td>
<td>Schinkel</td>
<td>Diprosty, recessed, columns 37 feet high.</td>
</tr>
<tr>
<td>&quot;</td>
<td>&quot;</td>
<td>Theatre, Berlin</td>
<td>Schinkel</td>
<td>Monoprosty, flight of steps in front.</td>
</tr>
<tr>
<td>&quot;</td>
<td>&quot;</td>
<td>East India House, London</td>
<td>Jupp</td>
<td>Pseudo-monopsthy; height of columns 36 feet.</td>
</tr>
<tr>
<td>&quot;</td>
<td>&quot;</td>
<td>St. Pancras’ Church, London</td>
<td>Meers Inwood</td>
<td>Monoprosty; florid Ionic; columns 36 feet high.</td>
</tr>
<tr>
<td>&quot;</td>
<td>&quot;</td>
<td>Royal Institution, Manchester</td>
<td>C. Barry</td>
<td>Monoprosty. Order continued laterally, forming loggias of three intercolumns on each side of prostyle.</td>
</tr>
<tr>
<td>&quot;</td>
<td>&quot;</td>
<td>Post-Office, Dublin</td>
<td>F. Johnston</td>
<td>Monoprosty, columns 36 feet high, fluted.</td>
</tr>
<tr>
<td>&quot;</td>
<td>&quot;</td>
<td>Radnus, Copenhagen</td>
<td>Hansen</td>
<td>Monoprosty; deep recess in centre with steps.</td>
</tr>
<tr>
<td>&quot;</td>
<td>&quot;</td>
<td>Colosseum, London</td>
<td>D. Burton</td>
<td>A monoprosty attached to a polygon.</td>
</tr>
<tr>
<td>&quot;</td>
<td>&quot;</td>
<td>Hunterian Museum, Glasgow</td>
<td>Schinkel</td>
<td>Monoprosty, recessed, with a distyle in anti.</td>
</tr>
<tr>
<td>&quot;</td>
<td>&quot;</td>
<td>County-hall, Chester</td>
<td>T. Harrison</td>
<td>Monoprosty, poly sty., recessed. A double hexastyle.</td>
</tr>
<tr>
<td>&quot;</td>
<td>&quot;</td>
<td>Wacht-Gebinde, Berlin</td>
<td></td>
<td>Four pilasters and two columns beneath a pediment, or five intercolumns.</td>
</tr>
<tr>
<td>&quot;</td>
<td>&quot;</td>
<td>Front of Roman Catholic Chapel, Finsbury Circus</td>
<td></td>
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</tbody>
</table>

PORTLAND (Isle). [DORSETSHIRE.]
PORTLAND, DUKE OF. [Prr.]
PORTLAND (America). [MAINE.]
PORTLAND OOLITE, a term in geology, synonymous with oolite of Brongniart, and upper oolite of some English geologists.

PORTLAND STONE. [DORSETSHIRE.]
PORTLAND VASE. The beautiful specimen of ancient art known by this name, but formerly bearing the appellation of the Barberini Vase, is one of the choicest treasures deposited in the British Museum. The time of its production is now unknown; but it is presumed to be the work of the master himself.
of a Grecian artist. The first information we have respecting it is, that about the middle of the sixteenth century the remains of a sepulchral chamber were discovered within a sepulchral chamber, under the mount called the Monte del Grano, about two miles and a half from Rome on the road leading to Frascati. This sepulchral chamber appears to have been the residence of Alexander Severus and of his mother Julia Maenaria; and the vase was probably a cinerary urn belonging to the sepulchre. Bar- tolli, in his work on Roman and Etruscan sepulchres (Gli Antichi Sepulchri), gives a description of the sepulchral insti-
tution of the Monte del Grano, with the hollow sepulchre within, and the spot in which the sarcophagus was found lying. The elegance of form and the admirable workman-
ship of the vase procured for it, as well as for the sarcoph-
agus, the interest of the Barberini family at Rome, where it remained more than two centuries; after which it became the property of Sir William Hamilton, from whom it passed to the Duchess of Portland. At length, in the year 1810, it was deposited in the British Museum by the Duke of Portland, and placed on an octagonal table in the middle of the small ante-room (No. 9) at the head of the stairs leading from the gallery of antiques.

This vase was said by Montfaucon to be formed of a precious stone; but subsequent examination has shown the material to be dark blue glass, relieved by figures and devices in white enamel. It is about ten inches in height, twelve inches broad at the should, and the diameter at the top being about three inches and a half; at the neck or smallest part, two inches; at the largest part (mid-height), seven inches; and at the bottom, five inches. The vestiges of the handle have been discovered. The height of the vase is fifty inches, and it is of the tallest adopted for vases of this kind; and of those who have been in any way remarkable for their own actions or through their position in society; and in a simply historical point of view, it illustrates the costume and habits of past ages.

Portraiture appears to have been almost as antient as the art of painting itself; indeed, according to the romantic legend told by Pliny (Hist. Nat., xxxv. 12, 43), it was in Greece the origin of the imitative arts; an enamoured Corinthian maid traced the picture of her lover around his shadow cast by a lamp upon the wall.

The most antient portraits extant, if they can be termed such, are those which have been found in the cases of mummies; there is a single painting in wax, but that they were well executed is very doubtful. (Pliny, xxxv. 3.)

Among the Romans, in the time of the republic, the possession of the portraits of their ancestors (imagines ma-
nerus) was a mark of family nobility, for no one was per-
none were permitted to make portraits of themselves ex-
tions who had themselves or whose ancestors had borne some curule magistracy; and Roman families were accustomed to bestow upon their family portraits the name imagines as a proof of their antient family. It is to be remembered, that these portraits or images, which were of wax, were preserved with great care by their posteriority, and were only brought out upon great occasions or carried before them in funeral pro-
cessions. (Pliny, xxxv. 2.) They were probably painted busts, for the art of casting with wax in plaster moulds taken from the life was, according to Pliny (xxxv. 12, 44), invented as early as the time of Alexander, by Lysiphus the brother of Hippocrates. It seems that the Romans were also sometimes in the habit of prefixing the portraits of authors to their works. Martial mentions one of Virgil (xiv. 186).

The most antient portrait-painter of extraordinary merit on record was said to have been the Prison of Apelles, Baccio. He is praised by Aristotle (Poet., 2) for the fidelity of his portraits; and from what Plutarch says (Timol., 36) of the high finish of his works, we may perhaps term him the Holbein of an-
tique: he flourished, as nearly as can be ascertained, shortly after the time of Polygnotus and Phidas, about 430 B.C.

The most famous portrait-painter among the antients was Apelles: he enjoyed the exclusive privilege of painting the portraits of his sovereigns. One of the most celebrated pic-
tures was that of a portrait that monarch as Jupiter, called the 'Alexander Ceraunophoros,' for which, according to the in-
credible account of Pliny (xxxv. 16, 36), he received twenty talents of gold (upwards of 30,000l. sterling); so great a sum, that it was made a subject of casting by Mr. Tassie ('musa, non numero'). Most of the pictures of Apelles were por-
traits in an extended sense, yet it is doubtful whether before
the time of the Roman emperors there was a distinct class of painters who confined themselves to portraits ('imaginum pictores': Pliny, xxxv. 11, 40). Even in the great days of Italian art there was not a distinct class of portrait painters; and it is not until the present times, and in the United States, that we find that although upon the whole the number of good portrait painters has very much increased, still portrait-painting itself has not improved since such has become the practice.

The portrait depends upon the sitter as well as upon the painter, and it may be spoiled by the bad taste of the one or the other. Excellence in portrait consists in placing every feature in its proper place, in a correctness of modelling, a judicious arrangement, a true light and shade, into the conception of the subject, and in tasteful attire and an unaffected and simple attitude; the former are within the province of the painter, the latter in that of the sitter. Much of the character may be shown by the posture and the manner; but a sitter should appear suited to his character, rank, or nation of the original. Upon these principles a good portrait must be a good picture, for the beauty of a picture consists in the harmony of the whole in composition, colour, and execution; and when every part has received the same treatment, the picture's subject is sure to be truer in proportion than in a portrait which requires, a picture cannot in any particular deviate from the truth, simplicity, and unity of nature. Fancy costumes are injurious to portraits as portraits, for a general resemblance being the principal object of portraiture, the subject should be dressed as usual, and the more simple the attire, the more prominent and consequently the more important will be the head, which is the principal object. Whatever colouring is derived from this picture, although the picture may perhaps gain in pictorial effect, it must lose as a portrait. A mere insipid transcript of the features, and an equal minute attention to the detail of the accessories, are a degradation of portrait. There is no other difference between historical painting and portrait painting than that portrait exacts a stricter attention to the individual character, and consequently requires a more careful execution of the head, but the draperies and accessories should be equally bold and free as in historical painting. Large canvases, and what are termed full-lengths, are ill suited to portrait, and the latter are seldom successful even under the most able hands. How often we see a great field of canvas, where the head is the most striking, whilst the mass of draperies, of trees, columns, or draperies; these are pictures of robes, not of men, and are only tolerable as state portraits, when the insignia of rank or office are more important than the individuals. Such should be termed Iconies (ἰκωνεῖς) rather than portraits. [Papæz Passav.]—

Expression is perhaps the most important study in portrait. To represent the true character of an individual, the countenance should be painted in repose, when no particular sentiment or passion predominates; for otherwise a good picture may be rendered a very bad portrait through the injudicious adoption of some transitory expression, or the introduction of a smile put on for the occasion, when perhaps the mouth is smiling, whilst the eye is sad; and vice versa. The expression may be also materially injured by exaggerating the local tints, which in most cases has the effect of changing the complexion, and the particular expression of every individual depends upon the complexion as well as upon the relative proportions of the features. It is by accurately giving these proportions that what is called a striking likeness is produced, and this may be accomplished without entering into any minute detail of the particular features. The expression is a principle of historical painting, but is a style only fit for the portraits of public characters, or such as are to be placed in spacious localities, and must be viewed at a distance.

Some painters, even of only probable resemblance, are generally pronounced to be striking likenesses, especially by those who have but an imperfect knowledge of the persons represented; for they are themselves unacquainted with any more of the physiognomy of the originals than they see expressed in the pictures. These portraits however lose their resemblance either upon close inspection or upon a prolonged view.

The most successful painters of portrait in modern times have been Leonardo da Vinci, Raffaello, Sebastian del Pombo, Rembrandt, and Vandevck; and the following pictures are amongst the finest specimens of portrait painting extant:—his own portrait by Leonardo da Vinci, in the possession of the Duke of Alba; the portrait of Sebastian del Pombo, in the Palazzo Doria at Rome; the head of Guido by Simone Cantarini, in the Academy at Bologna; Titian and Areth, by Titian, in the royal collection at Naples; the portrait of Portrait Ruggeri, by Titian, in the Palazzo Doria at Rome; the Meyer Family, by Holbein of the gallery at Dresden; and the head of Gervartius, by Vandevck, in the National Gallery in London.

Of the portrait painters of more recent times, Mengs, Gainsborough, Hogarth, Gerard, and Lawrence have enjoyed the greatest celebrity.

PORTSMOUTH, a corporate town in Hampshire, on the coast of the English Channel, and the principal station of the English navy; it is 66 miles in a direct line south-west of St. Paul's, London, or 73 from the General Post-Office by the mail-road through Kingston, Guildford, Godalming, and Petersfield; in 50° 47' n. lat. and 1° 7' w. long.

The harbour of Portsmouth is formed by the western end of an inlet of the British Channel, which, with its various creeks, extends nearly sixteen miles from west to east, from Fareham, in Hampshire, to Fisbourn, a village close to the Isle of Wight; is 46 miles long, and about four miles, on an average, from the open sea, inland. Two large alluvial islands, Portsea island on the west and Hayling island on the east, divide this inlet into three parts: the westernmost and smallest part forms Portsmouth harbour, between Portsea island and the main; the middle portion, between Portsea island and Hayling island, forms Langston harbour; and the eastern part, between Hayling island and the main, is divided into the western channel, known as the Emsworth channel and Chichester harbour. Each of these divisions presents, when the tide is up, a noble sheet of water; but when the tide is out, they are chiefly occupied by mud-banks, separated by channels of greater or less width. The greater depth of the channel, the narrowness of the entrance, and the consequent facility of defending it, render Portsmouth harbour by far the best of the three. The roadstead between the mouth of Portsmouth harbour and the Isle of Wight forms an anchorage, part of which is well known under the name of Spithead. Adjacent to Spithead, on the coast of the Isle of Wight, near the extreme extremity of the island, is the bay of St. Helen's, a port of refuge.—The size of the island of the port, extends between the Cowes and Ryde, is the Motherbank, an anchorage for smaller vessels.

The excellence of the port attracted the notice of the Romans, who established a station at Porchester on its northern shore (a.d. 43). The name also probably the origin of "Portus Magnus" of the Notitia; and the element of the Roman name Portus has been transmitted directly or mediately to the modern Portchester, Portsea (Port's ey, the island of the port), Portsmouth, Ports-down, and Gosport.

The decline of Port-chester, where there are still some Roman remains [Hampshire], is ascribed to the retiring of the sea, in consequence of which the inhabitants removed to Boscastle Brooms, and then to Walmer—adjoining beaches of the same which, on occasion of the landing (a.d. 591) of a body of Saxons, allies of Cerdic, founder of the West-Saxon kingdom. The leader of this body is said to have been called Port, and some have supposed the name of Portsmouth to have been derived from this circumstance; but the etymology given above appears much more probable. [Hampshire.]

Portsmouth was a place of importance in the time of Henry VIII. It was held by the Earl of Lincoln, Richard, Lord of Peverel, who in the reign of Henry II. granted to the town a charter, with the privilege of a weekly market and a yearly fair of fifteen days; and from some antient records it has lately been ascertained that there was a naval station at Portsmouth in the reign of John. In the time of Richard II. (a.d. 1377), Portsmouth was burned by the
FRENCH. Edward IV. and Richard III. secured it by fortifications; which were completed by Henry VIII. In the reign of Henry VIII., it became the principal if not the only station of the English navy, and in A.D. 1544 an indecisive engagement took place off Spithead. In the time of Charles I. (A.D. 1628), the duke of Buckingham, who had come down to hasten the equipment of the armament for the relief of Rochelle, was assassinated here. In the great civil war, the town was in ruins, but was soon repaired. The marriage of Charles II. with Catherine of Braganza was celebrated here (A.D. 1662). Since the time of Henry VIII. the fortifications have been so far extended (especially in the reigns of Charles II., William III., and George III.), as to make it one of the strongest places in the kingdom. It is said to require a garrison of 13,000 men to man the works and the forts, in case of a siege. The moats, which are wide and deep, can be filled with water from the sea.

The town of Portsmouth is situated at the south-western extremity of Portsea island, and just at the entrance of the harbour. It is enclosed by fortifications forming a semi-circle to landward, and has an area of 110 acres; it contained, in 1851, 1193 houses (beside 6 building and 40 uninhabited), inhabited by 1627 families; the population was 8083. The streets, with the exception of High-street, are narrow, and consist of houses of inferior appearance. There are some substantial houses in High-street, and in the streets of High-street, and in the streets of Portsmouth, are strongly fortified, and its defences are so united with those of Portsmouth, that the two towns may be considered as comprehended in the circuit of one fortress. The streets of Portsmouth and Portsea are well lighted and paved; inside the fortifications of these two towns are extensive suburbs, as Southsea on the east of Portsmouth, Landport adjacent to Portsea, and Mile End and Kingston rather more remote. Some of the houses in the suburbs are handsome, especially those in Kingston; the whole fort is in the hands of the garrison; and regularly built, are smaller and of inferior description. There are some groups of habitations less connected with Portsmouth. All these suburbs are in the parish of Portsea, which comprehends the whole of Portsea island, except the town of Portsmouth, some extra-parochial districts, chiefly belonging to government, on the east side, on the shore of Langstone harbour, formerly occupied by some salt-marsh and the northern extremity of the island, which is in Wimborne parish.

The mouth of Portsmouth harbour is about two miles wide between Port Monkon and Southsea Castle, two strong forts erected to command the approach. With this point the patrols point out what must be considered the true entrance into the harbour: within this entrance the harbour widens to half a mile between the dock-yard at Portsea and the town of Gosport on the opposite side; farther in, it expands to the width of three miles, and contains the three small low islands—Pewit Island, Horse Island, and Whale Island. There is sufficient depth of water for a first-rate ship to enter the harbour at almost any time of the tide. About a mile and a half from the entrance the main channel branches into three arms, leading respectively to Fareham, Porchester, and Portsbridge and the northern end of Portsea Island. The dockyard is the largest in the kingdom, containing from 113 to 120 acres; has a wharf-wall along the harbour of nearly three quarters of a mile, and is enclosed on the land side by a wall fourteen feet high, which completely separates it from the town. It includes a ropehouse, anchor-wharfs, an anchorforge, a copper-smelting foundry and mills; block, mast, sail and rigging, and other store houses; a grand basin, in which vessels are received with all their standing and running rigging to be repaired; building-ships, docks for repair in the open air, as well as for the reception of all necessary equipment, armament, and repair of vessels. There are also residences for the port admiral, the admiral superintendant and the other officers of the yard, a chapel, a school for Naval Architecture, and the bay of Spithead, one of the finest bays in the kingdom, invented by Mr. Mark Jamobard Bruenel, is an admirable manifestation of mechanical skill; it is impelled by steam. There are forty-four machines which are arranged in three sets for blocks of different sizes. They take the rough timber, cut it up, shape and bore it, and carry the process through to the completion of the blocks. The machinery is capable of producing 1400 blocks daily, and supplies the whole of the British Navy. The number of men employed in the dockyard, in time of war, has amounted to 9000 and even 10,000. The dockyard has twice been seriously injured by fire: in 1760, from the effect of lightning; in 1770, from an unascertained cause; and in 1776, from the attempt of an incendiary, John Atkin, otherwise known as Jack the Painter, who was hanged at the dock-gates, on a gallows 64 feet high, and afterwards hung in chains on the beach, on the west side of the entrance of the harbour. Adjacent to the dock-yard is the spacious and well furnished Gun-wharf and its connected buildings. It is considered the grand depot for canons, shot, and every description of ordnance stores.

The parish church of St. Thomas, Portsmouth, is a spacious building, including some antique portions, but mingled with additions of various later periods. The tower is 120 feet high, and forms a good mark for seamen, but the architecture is heavy and tasteless. It is surmounted by a cupola and lantern; the whole is crowned by the model of a ship, which serves as a vane. The garrison chapel on the Grand Parade; it is an ancient structure which belonged to the hospital of Domus Dei (House of God), repaired and fitted up for the officers and soldiers of the garrison. The parish church of St. Mary, Portsea, is in the suburb of Portsea, and was built at the last century. It is capable of accommodating 1900 persons, is a quadrangular building, in the perpendicular style of Gothic architecture, with four low turrets at the angles; the church of All Saints, Mile End, is of similar architecture, with a low, some western front, crowned with a bell-turret, and will accommodate more than 1700 persons. A new Gothic church with a tower has been built at Portsmouth, capable of holding above 1200 persons, and another of very pleasing architecture, is under construction at the town of Spithead, and, together nine places of worship of the establishment. Those of the Protestant Dissenters are yet more numerous; and there are a Roman Catholic chapel and a Jews' synagogue.

Among the other public buildings are the town-hall with a covered market-place underneath, in High Street; the governor's house, on the Grand Parade, originally part of the hospital of Domus Dei, but so much altered as to render it little of its former appearance; the residence of the lieutenant-governor; the theatre; the building of the Philosophical Society; and a national school house, with elegant concert, assembly, and card rooms above: these are in Portsea. The ramparts are planted with trees, and form a picturesque scene. The battery, at the end of the Parade, commands a fine view of the anchorage of Spithead and the Isle of Wight. On the London road, about two miles from the town, extending from the road to the harbour, is an extensive cemetery, laid out and planted with trees, and furnished with a chapel for the burial service, and an office for the officiating minister.

The population of Portsea has been given: that of Portsea, in 1831, was 42,306; of Portsmouth and Portsea together, 56,389. (Pop. Returns.) Of the inhabitants of Portsea, 14,674 were in the town, 23,325 in the suburbs. (Pop. of Municipal Corporations.) The population of Portsea parish is given in the same Return at 4980 acres; the number of inhabited houses at 8215, besides 57 building and 327 unreturned; and the number of families at 9767. The trade of the place, which is considerable at all times, but especially in time of war, amounts to a large expenditure connected with or caused by the naval station and dockyard, and is of a very miscellaneous character.

The port extends from the town of Emsworth, on Emsworth channel on the east, to the entrance of Southampton Water on the west; and includes Portsmouth and Langstone harbours, Emsworth channel, and the roadsteads of Spithead and the Isle of Wight. There is considerable coasting and foreign trade carried on. The Portsmouth and Arun Canal was originally carried nearly across Portsea Island (entering it from Langston harbour, across which the canal boats are towed by steam) to its terminus in a capacious basin at Langport;
but the creek at Por is, since the last peace, been rendered, and wine is brought direct access to the docks and wharfs of the harbour and the towns surrounding it, and the cut being now useless, the basin has been filled up and built upon. There is a considerable import of coal (it has increased thirty per cent, in the last ten years), and the last import of coal was 107,300 short tons. Several steam-vessels visit the port, some of which go and return several times in the day; and there are others which touch here in their passage. Communication is thus kept up between the West, Southampton, Plymouth, and Havre. A considerable part of the land round the town is laid out in market-gardens, from which the town is supplied with excellent vegetables. Tuesday, Thursday, and Saturday are market-days. There is a yearly fair of fifteen days from the 1st of July; and a holiday fair, held on Portdown Hill, at the close of Portsmouth fair, is much frequented.

The corporation of Portsmouth is said to have been established by Henry I., but the earliest known charter is of Richard I.; many subsequent charters were granted. The borough limits formerly included the parish and town of Portsmouth, the town of Portsea, and a considerable part of the parish of Portsea, extending along the harbour, with the exception of the jurisdiction of the corporation. By the Boundary Act the limits were extended, for parliamentary purposes, so as to include the whole parish of Portsea; and by the Municipal Reform Act the parliamentary limits were extended westward for municipal purposes. The enlarged borough is divided into six wards. The number of aldermen was fixed, by the Municipal Reform Act, at 14; the number of councillors at 42. Quarter-sessions for the borough are held. There is a Court of Quarter-sessions in the borough; petty-sessions are held three times in the week. The prison is not well situated, nor is it sufficient for the proper classification of the prisoners. There is neither a gaol nor a prison, and, therefore, there is no limit to the discipline considered too lax. (Inspectors of Prisons' Third Report.) The average number of prisoners is 50. Portsmouth first returned members to parliament in 123 Edward I.; the number of votes, before the Reform Act, was very small, but is now considerable. The number on the register in 1832-36 was 1439.

The living of Portsmouth is a vicarage, of the clear yearly value of £35, with a glebe-house. The living of Portsea is a rectory, in the deanery of Chichester, of £63, with a glebe-house. The perpetual curacies of the chapels are, in clear yearly value, as follows: St. George's, 45£, with a glebe-house; St. John's, 141£, with a glebe-house; St. Paul's, Southsea, St. Mary's, Southsea, and the third of Portsea are patron of these, except St. John's, to which the proprietors of pews present.

There were, in 1833, in the parishes of Portsmouth and Portsea, an infant school, with 40 children, held in Portsea workhouse; a grammar school for 20 free scholars; a large school, called 'The Beneficial Society School,' with from 200 to 300 boys; 'The Portsea Institution,' for 110 girls; two Lancastrian schools, with 250 boys and 112 girls; two national schools, with 409 boys and 166 girls; 'The seamen's school,' with 210 boys and 40 girls; a 'national school of industry,' with 40 boys and 40 girls; two workhouse schools, with 70 boys and 60 girls; and four other schools, wholly or partly supported by subscription, with 271 children, both sexes. There was a proprietary school, with 100 boys, and there were about two hundred and seventy day or boarding and day schools, most of them of a very humble description. There were Returns of the number of scholars at the three and from two hundred and seventeen of these schools, which contained 1243 boys, 475 girls, and 2657 children of sex not distinguished. There were, at the same time, twenty-six Sunday schools, with 1659 scholars. Returns of the charity and most of the Sunday-schools have lending libraries attached. There are a Portsmouth and Portsea Literary and Philosophical Society, with a tolerably extensive museum; an institution, called 'The Hampshire Literary Institution,' with a valuable collection of statistics; and a Mechanics' Institution. Beside the fortifications of the two towns of Portsmouth and Portsea, the island of Portsea has strong defences.
of fruits, especially excellent oranges and lemons, almonds, and abundance of good wine. The sea along the coasts and the rivers abound with fish, which is a great article of food with all classes. Sea-salt is collected in various places, particularly in the island of Setubal. The sheep supply abundance of wool, of which some is equal to that of the Spanish merinos in fineness. Portugal has mines of copper, tin, and iron, of which only some of iron are worked. The wool and manufactured cloths are coarse woolen cloths in Alemtejo and Beira; linens in Minho, Beira, and Tras os Montes; silks at Campo Grande near Lisbon, and also at Oporto and Braganza; jewellery at Lisbon and Oporto. There are also distilleries at Alemquer, Lisbon, and Guimarães; potteries at Lisbon, Oporto, Coimbra, Beja, Estremoz, and Caisdas; cotton manufactories at Alcoaiba and Thomar; and tanneries in various parts.

Population.—The population of Portugal was estimated at about three millions in 1827, but there has been no census in the present century. The population of Portugal proper resembles in appearance and manners that of some of the neighbouring provinces of Spain, especially of Galicia, the dialect of the Gallegos being also akin to the Portuguese language. But the Portuguese differ considerably from their neighbours of Catalonia, Aragon, and Navarre, and the difference has forcibly struck travellers who have crossed the eastern frontier of Portugal, which in several places is not marked by any geographical boundary. The houses, and even the way of life of the wretched in the extreme; the inhabitants are filthy both in their houses and persons, and the peasants seem dejected, indolent, and spiritless. The Spanish villages on the other side are unsurpassed for comfort. In Portugal the Roman Catholic, the Spaniard, the peasant, and the Spanish peasantry look manly, robust, and active. People have endeavoured to find a reason for this difference in the municipal or rather communal institutions of Spain, which even under the absolute monarchy retained their original freedom. [Avenues of Espoir]. In Portugal the city, as well as the interior in the mountainous districts, such as Tras os Montes, the peasantry are superior in activity and spirit to the rest, and it was mostly from those districts that the fine regiments of light infantry called Capadores were raised, which behaved so remarkably well throughout the Peninsular war. With regard to the educated classes, those of Portugal are generally polished in their manners, courteous to strangers, inantrating, fond of conversation, and sometimes more pleasing in their outward address than the generality of the corresponding classes in Spain. The 'filíagos,' or provincial nobility, are very numerous, though mostly poor. The products of the dwellers of different classes than in Spain. The capital of the kingdom however is not wanting in those literary and scientific institutions which, in any well regulated country, are calculated to encourage and advance the dignity of the sciences and arts. Lisbon, which has in some degree contributed to the advancement of astronomy, there are at Lisbon a royal naval school, an academy of civil and naval architecture, fortification and artillery, and drawing, painting, and sculpture; a college of surgeons, a commercial school, a royal military college, and another where the modern and antient languages, together with geometry, physics, and philosophy, are taught. The Royal Academy of Sciences, which holds the first rank among the scientific institutions of the kingdom, likewise holds its sittings at Lisbon. A society for the encouragement of national industry was established in Lisbon during Dom Pedro's regency. There are also in the capital extensive public libraries, a botanical garden, a museum of natural history, and various other scientific collections; a musical seminary, and a college for Irish missionaries. Yet with all these advantages science and literature are now in Portugal at a low ebb. The sixteenth printing-offices in all Portugal in 1827; one in Coimbra, three in Oporto, and twelve in Lisbon, which three places were the only towns that contained libraries or publishing offices. Revenue, Trade, &c.—The public revenue in 1837 was reckoned at a little more than two millions sterling, and the expenditure exceeded it by nearly half a million. The annual revenue of the navy is about nine thousand pounds. The present revenue of Portugal arises chiefly from the customs. The foreign trade is principally in the hands of English merchants. Most of the Portuguese wines and F. C., No. 1157. other produce are consumed in England. The direct trade between the ports of Great Britain and thore of Portugal was formerly carried on chiefly in English bottoms; but more recently nearly one-third of the ships engaged in this trade are Portuguese, and the trade with Ireland is almost wholly carried on in Portuguese vessels. Internal commerce suffers from the want of good roads. There are no canals, and the few rivers which are navigable are not so at present; even the Tagus, which has formerly occasionally been navigated, has yet insufficient to the necessities of the country. Portugal has neither ports nor means of communication with the rest of Europe. The important seas and rivers of Europe, and the two largest of the Mediterranean, are both accessible to French, Spanish, and English ships. There has been considerable progress; but few if any of the products of Portuguese industry can enter into competition with the corresponding articles of foreign manufacture. Religion.—The Roman Catholic church professes the Roman Catholic religion. At the head of the clergy is the patriarch of Lisbon, who has five suffragan bishops, besides four foreign bishops, and the archbishops of Braga and Braganza. The Portuguese navy was almost entirely destroyed by the Dutch and the English in their wars with that country when it formed part of the Spanish dominions; and although it revived under the first sovereigns of the house of Braganza, it again declined, and is now reduced to its present low condition. The best sailors are the Dutch, the English, and the French. There is no other naval station in the kingdom besides Lisbon, where there are an arsenal, dock, marine school, and other naval establishments. The land forces of Portugal have lately varied considerably, and sometimes number as many as 2,000,000, who still hold out in the fastnesses of the Algarve, have risen to importance. The uniforms and accoutrements of the men resemble those of the British troops.

Political Divisions.—Portugal and the Algarve were divided for administrative purposes into provinces, namely, Entre Douro e Minho, Tras os Montes, Beira, Estremadura, Alemtejo, Algarve. Each province was divided into communes, and each commune into parishes. The Cortes have been divided into six divisions, each of which has a separate head. The Cortes have lately made a new territorial division of the kingdom into twelve provinces, which are subdivided into twenty-six communes, which are again divided into the proper head. The Cortes have lately made a new territorial division of the kingdom into twelve provinces, which are subdivided into twenty-six communes, which are again further divided into the proper head. Government and Constitution.—During the middle ages feudalism was as prevalent in Portugal as in Spain, but the king was less restrained than in any other kingdom in the Peninsula. The first instance of the proper head. The Cortes have lately made a new territorial division of the kingdom into twelve provinces, which are subdivided into twenty-six communes, which are again
popular representation in Portugal occurred in 1143, when the three estates met at Leiria, to confirm Alfonso I, in the title of king, which he had received from the soldiers after the battle of Ourique. Again, in 1181, and in the lifetime of Afonso, the Cortes met, and gave the nation the celebrated code and constitution known as the Laws of Leiria. By this constitution the nation was made Hereditary, and was divided into three provinces, the northern or the Western Peninsula, the central, viz., the province of Estremadura, and the south, viz., the province of the Moors, or Andalusia. It thus comprised the greater part of the modern kingdom of Portugal, besides a considerable portion of Leon and Estremadura. This region was inhabited by various nations, and by all the races of the Orient, until in the sixteenth century, when Spain was inundated by the Germanic tribes, Portugal shared in the general devastation; and when, at the beginning of the eighteenth century, the country of Arabian conquest spread over the Peninsula, the states, and towns of Portugal were as easily subdued as the remainder of Spain. [MOORS; MUSA.]

During the first century after the Saracen invasion, Por-
tugal in the hands of the unbelievers shared the fate of the rest of Spain. In the ninth century, however, the greater part of northern Portugal was wrested from the Moham-
edans, and became subject to local governors dependent on the counts of Galicia. The south still remained in the hands of the Moors, and was not subdued until the twelfth century, when Santeram, Lisbon, and Citrana were reduced by Alfonso VI., the conqueror of Toledo. These conquests however were continually exposed to the intrusions of the Moors from the coast, and the land of Portugal was so often attacked and ravaged by the Moors that it was difficult to maintain any sort of peace. In 1139, having resolved to reduce the Moorish forresses west of the Guadiana, he assembled a powerful army at Coimbra, and advanced towards Badajoz, the governor of which place, having received orders from the king of Portugal, was ordered to meet him. The Moors were however defeated with great loss at Ourique in 1139.

Portugal under the Kings of the House of Burgundy. Alfonso II. (1139-1154), who had for some time contemplated throwing off all subservience to his lawful sovereign, caused himself to be proclaimed king by the soldiers. The cortes of Leiria confirmed his title; and gave to the new king, which was acknowledged by the pope Alexander III., a code of laws and a constitution. In 1146 Alfonso retook Santarem from the Moors, and, soon after (1147), Lisbon with the assistance of a fleet of crusaders under the command of William Longsword Lusinsk. In 1162 he founded the two military orders of Avis and San Miguel del Alca, which still exist. The remainder of his reign was spent either in war with the Moors, or in defending his dominions against the kings of Leon and Castile, who disputed his realm. This king, whose memory is held in the highest veneration by the Portuguese, died at the close of the year 1185. He was succeeded by Sancho I., his eldest surviving son, whose reign was so brief that it means so little to the present time. With the aid of some crusaders, whom a tempest forced to take refuge in the port of Lisbon, he took the town of Silves in Algarve; and though he afterwards defended his conquest with success against the Moors, as is stated above, in 1190, he nevertheless lost Palmella, Alcácer do Sal, Couto, and other important forresses; some of which he did not recover for a long time. Sancho died in 1211. His successor, Alfonso II., had at first to sustain a war against the king of Leon, who penetrated into his dominions; but a part of his time he bestowed all his attention to the prosecution of the war against the Mohammedans. Though he was not present at the battle of Tolea (1213), he nevertheless sent to Alfonso III., of Castile his contingent of troops. In 1217 the arrival of
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another fleet of crusaders in his port led him to undertake,
with their aid, the siege of Alcacar do Sal, and after a blockade of several months, and a battle fought under its walls,
that important fortress was again recovered. This conquest
was followed by that of Moura and other towns in Alentejo.
His son Sancho II M who succeeded him in 1223, was
animated by the same military ardour. Soon after his accession he recovered Elvas, Jarumenha, and Serpa.
He
then carried the war into Algarve, and was victorious
in several partial engagements.
He also made successful
incursions into Alentejo, which he appears to have completely delivered from the infidels.
At the same time the
knights of Santiago, to whom he had entrusted the defence of the frontier fortresses, reduced Tavira, Faro, Louie,
and other towns in Algarve. The populous city of Silves,

which had been regained by the Mohammedans, was likewise recovered by the knights of tbat Order. In 1245
Sancho, having become highly unpopular with the clergy,
whose privileges he attacked, an application was made by
them to Innocent IV., who was then presiding over a general council at Lyon, and who, in concert with the fathers,
issued a decree, by which, though the royal title was left to
Sancho, the administration of the kingdom was declared
to be vested in the Infante Alfonso, brother of the king.
After some unsuccessful attempts to resist the papal decree,
the dethroned monarch retired to Toledo, where he ended
his days early in 12t8.
Alfonso III. completed the conquest of Algarve, which his predecessor had begun, and
was thence called the 'Restorer.'
Though he owed his
throne to a decision of the holy see, he showed as
little disposition as his brother to comply with its demands.
The whole of his reign was passed in disputes, either with
his prelates, whose religious privileges he sought to curtail,
or with the military orders, whose possessions had from
conquest become too large. In both instances however he
was forced to yield. Alfonso died in 1 279, and was succeeded
by his son Dinis, who, like his father and most of his preHaving
decessors, was long at war with the church.
at last convoked a meeting of his prelates, he effected a reconciliation with the church by yielding in most points,
though lie was completely successful in the main one,
namely, that no order of ecclesiastics should be allowed
to hold land in his kingdom. The reign of Dinis was not
signalised by foreign conquest; the Mohammedans being
then reduced, through the activity of Ferdinand III., to the
limits of the kingdom of Granada. He had however to
contend with his rebellious son Alfonso, who, aided by a
turbulent and discontented nobility, more than once took
the field against him. The name of Dinis has passed to
posterity coupled with the glorious epithets of • the just,'
'
the husbandman,' and ' the father of nis country.' He was
the first who turned to account the favourable position of
the country for commerce, and who, by awaking the enterprise of his subjects, laid the foundation of the greatness of
Portugal in the succeeding century. Himself a scholar and
a poet, he was a generous patron of science, which he fostered in his states. In 1284 he laid the foundation of a
university in Lisbon, which he afterwards (1368) transferred to Coimbra, With the confiscated possessions of the
Templars, he founded and endowed the new military order
of Christ.
Dinis was succeeded, in 1325, by his son Alfonso IV.,
surnamed the Brave, whose reign was almost entirely spent
Peace being at
in war with his namesake of Castile.
last concluded between them by the interference of the
pope, he joined his arms to those of his rival, and assisted
him in humbling the power of the Mohammedans, who, reinforced by their African neighbours, threatened once
more to accomplish the entire subjugation of the Peninsula.
His son Pedro I., who succeeded him in 1357, is chiefly
known by his secret marriage with the celebrated In6s de
Castro, and the tissue of crimes caused by that union. He
was succeeded in 1367 by his son Fernando I., who, on the
death of Pedro the Cruel of Castile without male heirs, assumed the regal title and arms of that kingdom, as the
grandson of the Princess Beatrix, daughter or Sancho the
Brave of Castile. His entire reign was spent in war with
the bastard Enrique, who had usurped the throne of Castile; but though tie wasted his resources, he gained no advantages. With the death of this monarch, in 1383, the
male line of the Burgundian princes became extinct in Portugal.
His daughter Beatrix, who had married Juan I. of
Castile, was the true heir to the throne, but the Portuguese

were so averse

to a connection with Castile, that, on the
marriage of the princess with the Castilian king, it had been
expressly stipulated that in case of Fernando's death the
government should be vested in a regency until Beatrix had
a son capable of assuming the sovereignty. Accordingly
Dom Joam, grand-master of the order of Avis, an illegitimate son of king Pedro I., was appointed regent,
and two years afterwards was proclaimed king by the
states assembled at Coimbra in 1385, to the prejudice
of Enrique, son of Beatrix, the lawful heir to the
Portuguese throne. Joam I. maintained the possession of
his usurped throne with great ability and courage.
After
several successful encounters with the troops of the Castilian king, he defeated them with great loss at Aljubarrota,
a village in Portuguese Estremadura (August 14, 1385).
With this king begins the native line of Portuguese kings,
as well as the foreign conquests and voyages of discovery
which established the greatness of Portugal. The important fortress of Ceuta was wrested from the Moors in 1415.
Henry, surnamed the Navigator, one of the king's sons,
who had made the mathematical sciences and navigation
almost his sole study, first set on foot those enterprises
of discovery and commerce which raised Portugal so much
above contemporary states. He made a first voyage of discovery in 1419, which proved unsuccessful. In the following year, with three vessels, be reached the Madeiras, which
had been previously discovered by Machin, an Englishman.
A subsequent expedition penetrated as far south as Sierra
Leon a, within three degrees of the line. The reign of
Joam I. is justly considered one of the most glorious which
Portugal ever had. He improved the administration of the
kingdom, and introduced many salutary reforms iiito the
courts of justice. He transferred the royal residence from
Coimbra to Lisbon. At his death in 1433, Joam I. was succeeded by Duarte, under whose reign happened the disastrous expedition against Tangiers, in which the Portuguese lost an arm?, besides one of their leaders, the Infante
Dom Fernando, who remained a prisoner in the bands of the

Moors

(1437).

Duarte,

who

died of the plague atTomar,

was succeeded

by

his eldest son Alfonso V. ; but as he was only six years
of age on his father's death, the regency devolved, according to his will, upon the queen-mother, a very able princess.

Under

the reign of this king the career of African conquest

was ardently prosecuted. The port of Alcacar Saguer, on
the African coast, was invested and taken in 1457. Arsilla,
a port on the Atlantic, was next stormed, and the inhabitants were put to the sword (1471). The populous city of
Tangiers, which had hitherto defied all the power of Portugal, was next reduced, chiefly through the instrumentality
of his eldest son Joam, who for his gallant behaviour on
this occasion received the honour of knighthood.
Towards
the close of his reign Alfonso was induced to favour the
pretensions of La Beltraneja to the throne of Castile, and to
make war upon Ferdinand and Isabella, whom he considered
as usurpers.
But his troops having been completely routed
atToro, in 147(5, be was obliged to accept peace on very
humiliating conditions (1479). Alfonso died of the plague
in 1481.
He founded the order of the Tower and Sword,
He was a great patron of literature, and the first Portuguese
king who collected a library, and ordered the national history to be treated by competent writers.
His reign was
likewise signalised by the progress of maritime discovery,
and the Azores, with the Madeiras, the Canaries, Cape
Verd, and other islands west of the African continent, were
either discovered or colonised through the persevering
efforts of the Infante Dom Enrique.
Joam II., who succeeded Alfonso II., was justly considered one of the ablest
monarchs that ever sat on the throne of Portugal. He was
the first who coped with the nobles, whose power had
greatly increased under his predecessors. All grants of
crown-lands made by his indulgent predecessors Were revoked, and the judicial privileges of the nobility were
restricted by the appointment of plebeians to all the magistracies.
Some attempts having been made by the nobles
to resist the king's orders, the duke of Braganza, who was
their representative, was beheaded in 1463, and the duke of
Viseo was put to death by the king's own hand in 1483.
In this reign the Portuguese spirit of maritime discovery
was carried to the highest pitch.
fort was built on
the coast of Guinea, which had been discovered under the
reign of his predecessor, for the purpose of maintaining a
permanent commercial intercourse with the natives, and

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from this moment Portugal derived from that coast a considerable profit in ivory and gold, which supplied ample resources for the development of its enterprise. This new source of fresh impulse from the capital and industry of the Spanish Jews, 83,000 in number, whom the intolerant rigour of Fer- dinand and Isabella had driven from their dominions, and who were admitted in Portugal on the payment of a capitation tax.

In 1481, Joam, having conceived that by coating along the African continent a passage to the East Indies might be discovered, dispatched two ships, the Vitoria under Pedro da Payya, into India and Abyssinia, to discover the route to and between these vast regions, and learn what advantages Portuguese commerce might derive from the knowledge thus acquired. After reaching Alexandria, the adventurers were overtaken by a violent storm. Covilhan for India, Da Payya for Abyssinia, agreeing to rejoin each other in a given period at Cairo. Covilhan embarked on the Red Sea, and visited the most famous cities of India as far as the Ganges. On his return he sailed along the shores of Persia, Arabia, and Africa, as far as Mozambique, where he learned that the continent terminated in a great cape. Having heard at Cairo of his companion's death, he settled in Abyssinia, whence he wrote to the king, and sent him a chart of the maritime places that he had visited. These discoveries encouraged Joam to attempt a passage to India. The kingdoms of Benin and Congo were first discovered, the former by Vasco de Aveiro, the latter by Joaö II. [BRAZIL; CONGO]. The Portuguese next formed a settlement on the coast of Senegal, the king of which country had previously visited Lisbon. At last, in 1487, an enterprising officer named Bartholomew Diaz discovered and became the first European master of the southern cape of Africa. The most auspicious must be a spruce for the neglect with which the negotiations of Columbus to seek new lands in the west were received at the Portuguese court. However, no success was made in this enterprise, and the Portuguese were driven into the Mediterranean. The fruit of the discovery of the African continent, so auspiciously awaited, was largely the ruin of Portugal, and Joam, the first European monarch who permitted them to enter his dominions. [JEUITS; LOYOLA]. The education of his grandson Sebastian, the heir-apparent to the throne, was likewise entrusted to the Jesuits, who inducted him into those principles of the Inquisition and fanaticism which led to his death. In 1557, on the death of his grandfather, Sebastian being only three years old, the regency was vested in the widowed queen Catherine of Austria. The latter, the only child of Francis I. and Marie de France, was the daughter of Ferdinand, and the heiress of the Holy Roman Empire. Under her the Portuguese empire, which had been torn and ravaged by the Portuguese and by its unwise administration. England and Holland, the powerful enemies of Spain, now attacked Portugal, and the wealth of which promised them a rich booty, and whose defenses were thrown open by the Portuguese, were opened to them. The Dutch took the Moluccas and a great portion of Brazil in 1624. They likewise took possession of the Portuguese settlements on the coast of Guinea (1637), and forced their way into the rich markets of the East Indies. Spain, then at war with the European states, could not attend to the defense of these distant possessions, and the colonies of Portugal were one by one wrested from her by her active enemies. The English, the Dutch, and the French, in the administration of the English colony, who, rather than submit to the Spanish yoke, elected Dom António, prior of Crato, a bastard of Dom Luis, brother of Joam III. Portugal thus became annexed to a kingdom which from this time was constantly at war with the other states of Europe, and with its own other wars and by its unwise administration. England and Holland, the powerful enemies of Spain, now attacked Portugal, the wealth of which promised them a rich booty, and whose defenses were thrown open by the Portuguese, were opened to them. The Dutch took the Moluccas and a great portion of Brazil in 1624. They likewise took possession of the Portuguese settlements on the coast of Guinea (1637), and forced their way into the rich markets of the East Indies. Spain, then at war with the European states, could not attend to the defense of these distant possessions, and the colonies of Portugal were one by one wrested from her by her active enemies. The English, the Dutch, and the French, in the administration of the English colony, who, rather than submit to the Spanish yoke, elected Dom António, prior of Crato, a bastard of Dom Luis, brother of Joam III. Portugal thus became annexed to a kingdom which from this time was constantly at war with the other states of Europe, and with its own
son Afonso VI, who completed the work begun by his father and firmly established Portuguese independence. 

A treaty of peace was also concluded with Holland by English mediation, by which Brazil was restored to Portugal; but its former greatness could not have been restored, even had the princes of the line of Braganza displayed more wisdom and vigour than they actually did. Pedro II, who succeeded his brother Afonso IV. in 1638, took part with the allies against Philip V. of Spain. From this time date the relations and alliance of England with Portugal. A French embassy had already been made, under the first sovereign of the house of Braganza. 

A new one was concluded in 1703 by the English ambassador Mr. Methuen, which secured to England the advantages of the treaty by which it possessed the mines of Brazil. 

During the regency of Joseph I, who ascended the throne of Portugal in 1656, whilst the country was still recovering from the vast misfortunes which had sprung up in Spain, became also visible in Portugal. His minister, the marquis of Pombal, a vigorous reformer, followed the steps of Aranda and Floridablanca, which with equal success, were healing the wounds which had admitted the French. 

The Jesuits and the nobility, who under the preceding reign had exercised a secret and dangerous influence, were vigorously attacked. The exposure of the power which the former had exercised, in the earthquakes which took place in 1755-1756, laid so great a portion of the capital in ruins—the conspiracy against the life of the king (a charge however which appears destitute of all foundation) and his house; and the third day of the reign. In 1757 they had been deprived of the post of confessors to the royal family and forbidden the court; two years after, they were banished from the kingdom and their estates confiscated, a measure which was only imitated a few years afterwards (1766) by their neighbours of the Peninsula. 

The Jesuits. 

On the accession of Maria Francisca Isabel, eldest daughter of Joseph, in 1777, the marquis of Pombal lost the influence of which he had been the instrument. The nation revolved from a state of lethargy, and although most of the useful regulations which he introduced did not survive his fall, yet the enlightened views which he disseminated, and the example which he set in his own life, had permanent effects. During the reign of Maria, the power remained almost entirely in the hands of an ignorant nobility and of a still more ignorant and ambitious clergy. In 1789, an account of a serious insurrection of the Portuguese, headed by the eldest son, Joao Maria Joao, prince of Brazil (the title of the prince royal until 1816), was declared regent, and soon after, her malady having terminated in mental alienation, the prince was declared regent with full regal powers. The connection of Portugal with England involved Joao VI. in the wars against France; but in 1797, the commercial distress, the accumulating debt, and the threatening language of Spain, induced the interests of the two nations to renew hostilities, in alliance with England and Russia; but French politics again preponderating in Madrid, the Prince de la Paix (Godoy), then prime minister, was persuaded to declare war against Portugal, which kingdom he invaded in 1801. Hostilities however terminated the same year, by the treaty of Badajos, by which Portugal was obliged to cede to Spain the important fortress of Olivenza, but not part of the Spanish possessions with it. England henceforth took a more decided part in the war. 

The division of the French arms in 1799 encouraged the regent to renew hostilities, in alliance with England and Russia; but French politics again preponderating in Madrid, the Prince de la Paix (Godoy), then prime minister, was persuaded to declare war against Portugal, which kingdom he invaded in 1801. Hostilities however terminated the same year, by the treaty of Badajos, by which Portugal was obliged to cede to Spain the important fortress of Olivenza, but not part of the Spanish possessions with it.
Austria left the court; Brazil separated itself from Portugal; and the country was disturbed by various attempts in favour of the old system of government. In the meanwhile the constitution was completed by the legislative assembly, and publicly sworn to by the king on the 1st of October, 1822, but the Infante Dom Miguel, assisted by the Count of Amarante and other noblemen, resolved to overthrow it. The royalist forces under Amarante having been defeated, the insurgents took refuge in Spain, and in May, 1823, estab-
lished the kingdom of Portugal under the su-
premacy of the patriarch of Lisbon, who had been banished
from the kingdom. Dom Miguel, after insistently assuring his father of his determination to uphold the constitution, repaired to Villaviciosa, where he was joined by some troops, but went over openly to the Cortes. The garrisons of some provincial towns having embraced his cause, John VI. was obliged to yield, and having appointed a new ministry, declared the constitution of 1822 null; the national guards were disarmed, the church properly restored, the patricians of Lisbon recalled, Count Amarante reinstated in his rank and rights, several members of the Cortes imprisoned or ex-
iled, and the liberty of the press abolished. But Joam VI., who under any other circumstances would have been an excellent king, was unwilling altogether to deprive the Portuguese of a liberal government, and a commission was appointed, at the head of which was Palmella, to draw up a constitution for the purpose of securing the kingdom. But this again failed through the intrigues of the apolitical party, supported by France and Spain; the queen returned to Lisbon, and Amarante made his entry into the capital, and assumed the marquis title, which he held of the town where he had organised his insurrection against the Cortes. Dom Miguel, who had been appointed com-
mander-in-chief of the army, and invested with supreme power, filled the offices with men devoted to the cause of absolutism. He also made preparations to embark for Brazil, but an exhausted treasury prevented him from carrying his plan into execution. At last the absolutist party deter-
mined to annihilate the hopes of the constitutionists, and to effect a system of measures which would ruin the king still adhered. On the 30th of April, 1824, Dom Miguel called the troops to arms, and issued a proclamation, in which he declared that it was his intention to deliver the king his father from the hands of the constitutionists who surrounded his person. By his orders the ministers and several public officers, to the number of about one hundred, were arrested on the charge of having engaged in a conspira-
cy against the life of the king. In the meantime the ambassadors of the foreign powers were not allowed to enter the presence of the king, who was closely watched; but having subsequently protested against this violence, Joam III. ordered the English minister to leave his post as war at anchor in the Tagus, where, having been sent for the diplomatic body, he deprived him of command, and summoned him to his presence. Dom Miguel obeyed, con-
fessed that he had been deceived and misguided, and re-
ceded all measures with permission to the king. On the 14th of May the king returned ashore, and early in June proclaimed a sort of amnesty for the adherents of the Cortes of 1820. On the same day appeared a decree reviving the ant-
tient constitution of the state, and summoning the old Cortes of Lamego, which had not met since 1697, a measure which, being stoutly opposed by Spain, was not carried into execu-
tion. In 1825, after many difficulties and protracted negotia-
tions, the independence of Brazil was finally acknowledged by Joam VI., who merely retained the imperial title.

Early in March, 1826, Joam VI. died, after having named the Infanta Isabel regent. She administered the kingdom in the name of the Infante, the emperor of Brazil, as king of Portugal. On the 23rd of April, Pedro IV. granted the latter kingdom a constitution, which established two chambers, and in other respects resembled the French charter. On the 2nd of May, the Prince of the Peace, and Duke of Vila-
da Maria da Gloria (the remaining king during her minority) on condition of her marrying her uncle Dom Miguel. But a party secretly favoured by Spain aimed at the overthrow of the constitution granted by Pedro, which had been sworn to by the Cortes, the king himself, and all the magistrates, and by Dom Miguel himself at Lisbon in 1826. The marquis of Chaves and the marquis of Abrantes ap-
peared at the head of an army of insurgents, and Spain assembled considerable forces on the Portuguese frontier; but Portugal having appealed to England for assistance,
young queen, who was received by the Portuguese nation with every demonstration of joy. In the meantime the army of Dom Pedro prosecuted its success. Early in 1834 the strong town of Leria was taken from the Miqueletes by Marshal Tolda; and in April a Spanish army under General Rodó, joined Portugal for the purpose of seizing the person of the Infante Don Carlos, the pretender to the Spanish crown, who, with a few followers, had crossed over the frontier and taken refuge in Portugal. On the approach of the Spanish troops the important town of Almeida declared for the young queen. Shortly after a treaty was signed at Lisbon between England, France, Spain, and Portugal, which had for its object the expulsion of Don Carlos, who had fled to England, from Don Carlos and Don Miguel from the Portuguese territory. On the 26th of May, 1832, after the surrender of Santarem and other places, Don Miguel was obliged to capitulate and sign the convention of Erfurt. He was thereafter permitted to leave Portugal, and to embark at Monte for Genoa. This event ended the struggle, and the young queen was firmly seated on the throne of Portugal, the regency being conferred upon her father. One of the first acts of his restoration was the disbanding of the monastic establishments; another was the partial abolition of paper money, and the formation of a metallic currency. On the 15th of August Dom Pedro was crowned, and on the following month the declining state of his health induced him to resign his office, the Cortes in consequence declared the young queen of age. Having therefore taken the oath according to the constitution, she became the complete head of the state and ruler of the nation. Don Pedro died on the 22nd of September, 1834. Soon after (January, 1835), Dona Maria married Duke Augustus of Leuchtenberg, who died shortly after (March, 1835), and was succeeded by Prince Camillo Raphael, Count of Coburg-Guila, by whom she has issue Prince Pedro de Alcantara, born 16th of September, 1837, and Luís Felipe, born 31st of October, 1838.

That the language of Portugal, like those of other kingdoms in the Peninsula, originated in a mixture of the Latin, Teutonic, and Arabic. Some writers have improperly called it a dialect of the Castilian; but, besides the striking difference in its structure and pronunciation, there is no reason to suppose that it has been derived from it. The cantigas of Alfonso X. were written in Galician, and long after the formation of the Castilian dialect Leonese and Castilian poets used the Galician or Portuguese dialect as a vehicle for the expression of their poetry. The separation of Portugal from Spain, their wars, and the little commercial intercourse which existed between them during the middle ages, combined in course of time to make the Castilian language and poetry of little importance. Burgundy fixed his court at Guimares, the French knights who came with him introduced a considerable number of French words into the language of the country. The great efforts of the Portuguese poets and prose writers in the fifteenth and sixteenth centuries to improve their native language by resisting the introduction of Castilian words, and anathematising all who adopted the Spanish language in their writings, may be mentioned as one of the means contributed to the purity of the language, which, under the tongues of Spain and Portugal still more dissimilar. The same period of the sixteenth and seventeenth centuries the Spanish, like the Portuguese, has many words borrowed from the Arabic. Their wars with the Moors of Africa and the Mahommedans of Barbary, and conquests in the East, brought into it many others from the languages spoken in those countries. Father Joao de Sousa published, in 1749, a vocabulary containing no less than 1400 words derived from the Arabic language, under General Godói, entered Portugal, and some of those languages formed into it, as noo and na instead of en lo and en la; and the loss of that sonorous accentuation of the Spanish words by the change of color, palatino, padre, madre, &c. into cor, pag, pay, may, if they add in some manner to the fluency of the Portuguese, place it far beneath the stateliness and majesty of the Spanish. Simondi has very wittily remarked that the Portuguese preserves the Teutonic, and the Spanish the Romance, while the Castilian does both. The f and the a are the two sounds in which the Portuguese differs most from the Spanish; these letters are pronounced like the French, whom they also imitate in the sounds, and in their mute ending. The best Portuguese grammar is that of Pedro José de Figueiredo ('Arte da Gramática Portugueza,' Lisboa, 1799); and the best dictionary the revised edition of Bluteau, 'Dicionario da Língua Portugueza,' of Ribeiro, Lisbon, 1793. In 1839 the Academia Real das Sciencias of Lisbon undertook to publish a Portuguese dictionary, of which however only one volume has hitherto appeared, a thick folio, containing A, and embracing the fifth part of the words in the language.

Literature.—The literature of Portugal is complete without being very rich. In all branches there have been happy attempts; in none is there an abundance, except that of lyric poetry. In prose, both in matters of that kind, the Portuguese are richer than their neighbours of the Peninsula. Poetry comprises the most important part of their literature; prose and eloquence have been very little cultivated. The literature of Portugal has been affected by the persecutions of the Inquisition. After the fifteenth century, poetry in Portugal became and remained bombastic and affected, and its ancient power and natural grace were lost. In the reign of Pedro IV, which time of his writings were copied, and many Galicisms were admitted. Under Pombal, Portuguese literature revived, and poets strove to give elevation to the language. Prose too became more ornate and picturesque. The Petrarquism of the reign of Philip V., the first of his race, was the last that banished the scholastic logic and metaphysics from the lecture-rooms of Coimbra. The study of the ancient languages was always and still continues to be neglected. There are not more than eight schools for the Greek language in all Portugal.

That Portuguese poetry flourished earlier than the Castilian is generally supposed from the fact of two poets, Goncalo Herminio and Eneas Mosin, having written in verse as early as the reign of Alfonso I, in the twelfth century. The few poetical fragments however of these ancient bards which have been preserved by Faria e Sousa ('Europa Portugueza,' vol. iii., p. 378) are not wholly intelligible even to the natives of Portugal. In both ages and of that kind, the language used by any known author is extant, the opinion entertained by Buterweck (vol. ii., p. 3) that the prevailing tone of romantic love which characterized the poetry of the Spaniards was not so marked in Portugal, is not generally adopted, originated in Portugal, is not without foundation; although the supposition is rendered less probable by the fact that the Galician and Portuguese languages are almost identical, and by the close connexion of the separation of Portugal from the Castiles, closely distinguishable. In the same manner we might be inclined to think that the Portuguese also preceded the Spaniards in epic (or rather, historical) poetry, since an old Portuguese narrative in ductile stanzas, quoted by Faria e Sousa, is unquestionably much older than any similar attempt of the Castilian poets. However, until the latter half of the thirteenth century, when the language became more regular and distinct, the rude attempts of the early poets of Portugal cannot be mentioned otherwise than as curious relics of antient times. King Dinis, who, like his contemporary Alfonso the Learned of Castile, was a poet and a scholar who wrote himself, was the first to improve and give an impulse to general literature. His poetical compositions were, according to the fashion of the age, collected in cenceretos, which bore the name of the royal author. Under Alfonso III. of Portugal, round about the middle of the period of Portuguese literature. A tender as well as heroic spirit, a fiery activity, a soft enthusiasm, woe, love, and glory
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filled the whole nation; and the Portuguese poets sang an heroic and romantic strain, of which the 'Cancionero Genes' contain numerous specimens. The earliest of these was printed in 1516, by Garcia de Resende, who lived at the courts of Joao II. and Emmanuel the Great. A later collection, by Pedro Ribeiro, bearing the date of 1577, is still in manuscript. Another, discovered at Madrid, in 1790, by Joaquim Jose Ferreira Gordo, comprising poems by a hundred and fifty writers of the fifteenth century, is known only by a short account of it in the 'Memorias de Literatura Lusitana'. Portuguese poetry flourished under Emmanuel the Great, and who is better known as a of a romance in prose entitled 'Menina e Moça' (Lisboa, 1559 and 1765, 8vo.), was the first to write eclogues, which, with the exception of Cervantes, are not found in the poetry of his contemporaries, may in every respect claim supe-

riority. This direction of taste gave rise to the numerous pastoral poets of Portugal during the fifteenth century.

Christovao Falcão, a knight of the order of Christ, and governor of Madeira, was the author of a long eclogue of 900 verses, which was printed as an appendix to the works of Ribeiro. Several eminent poets imitated his example; and Porto, as it has not without reason been regarded as a native land of romantic pastoral poetry, which the Portu-
guese poet Jorge de Monetmayor afterwards introduced into the literature of Spain. It is a remarkable fact that several of the poets of this period composed their works in

different language, and used the latter in preference, if they wished to treat great subjects. Sa de Miranda, who flourished towards the middle of the sixteenth century, and is the author of several well-known romances, besides two comedies, and several epistles in imitation of those of Horace, is considered to be the author of the Italian style of poetry into Por-
tugal, where it was quietly adopted, and without exciting the violent literary storm roused in Spain against its inva-
tarsian. He was also the founder of a classical school, which was not without admirers and imitators. In this number may be enumerated Antonio Ferreyra, whom the Portuguese of our day are so accustomed to his having composed that author's epistles, and whose works were reprinted in 1772 at Lisbon; Jeronimo Cortereal, the author of an

spicilegium entitled 'La Batalla de Lepanto,' and several other works in Spanish. Diego Bernardes, who wrote eclogues, epistles, and numerous sonnets; and, lastly, Pedro de An-
drade Caminha, whose long-lasting works were discovered and printed at the expense of the Royal Academy of Lisbon in 1778, 8vo.

The most celebrated, however, of all the Portu-
guese poets is Luys de Camoes, whose poem 'O Lisuadia' is sufficiently known, and has been translated into every language of Europe. There are no less than three English versions of it; the most ancient is that of Richard Boyle, Lord Viscount Cork (London, 1607, 4to.); next comes Julius Mickle, which appeared at Oxford in 1776, 4to.; and lastly that of Thomas Moore Musgrave, 1826, 8vo.

Soon after the death of Camoes, who ended his life in an hospital in 1579, and of which he is the author of a new 'Romance of the Round Table.' Estevam Rodrigues de Castro, a poet, and at the same time a learned physician, wrote sonnets, odes, and eclogues with great success. Fer-
nando de Moura, his successor, has compiled the minute and accurate works of Camoes (Lisboa, 1595, 8vo.), and has preserved the whole of it in manuscript.

Manuel de Faria e Sousa afterwards published a learned Spanish commentary on the works of the Portu-
guese poet, Lisbon, 1688-9, 4to. A very handsome edi-
tion was lately produced by Jose Maria de Sousa Botelho, and printed at Paris by Firmin Didot, 1817, 4to. Jorge Ferreira de Vasconcellos distinguished himself by the com-

position of the very popular and excellent comedy of a new 'Romance of the Round Table.' Estevam Rodrigues de Castro, a poet, and at the same time a learned physician, wrote sonnets, odes, and eclogues with great success. Fer-
nando de Moura, his successor, has compiled the minute and accurate works of Camoes (Lisboa, 1595, 8vo.), and has preserved the whole of it in manuscript.

The learned statesman Miguel Cabedo de Vasconcellos, who resided for several years in France, was particularly distinguished as a writer of Latin verse; and the celebrated Rodrigues Lobo, who wrote the celebrated 'Romance of the Round Table' of Camoes' works, made several successful attempts to in-
troduce a kind of Ciceronian style into Portuguese prose. His 'Corte da Aldeia, e Noites de Inverno' is a species of romance in prose, in which he not only imitated the style of the Roman orator, but introduced dialogues with the

same forms of friendly intercourse as those which characterise the Tuscanian and Academic Discourses, in which friends dis-

cuss concerning the proper education of an accomplished man of the world. This production, which must be con-

sidered as the first Portuguese classical prose work, did not prevent the author from cultivating poetry, and his master-

pieces are the most luxuriant blossoms of this old branch of Portuguese literature.

In this century also, the voyages of discovery of the Por-
tuguese are chiefly remarkable for the abundant literary materials. Of this kind are the 'Per-

grinação' (Travels), by Fernam Mendes Pinto (Lisboa, 1620, fol.), which were translated into almost every Eu-

ropean language; the 'Itinerario thru Spain and India,' by Menezes; and the ac-
ccounts of the missions to Abyssinia and Ethiopia, by Almeida, Alvares, and others. Romances and books of chivalry are another branch of literature which the Portuguese diligently cultivated during the sixteenth century. The former, they imitated from the Spaniards, to whose language—the Cas-
tilian—this kind of composition seems to be essentially at-
tached; but they claim, without reason, the priority in second. 'Amadis de Gaul,' Cervantes spares in his judgment on romances of chivalry, was written by Francisco de Moraes; and there is every reason to believe that 'Amadis,' in its original form, is a product of the Portuguese imagination. Other works of this sort are, 'As Ribeiras de Mongedo,' by Saa Tomymator, 'A Constante Florinda,' by Gaspar Pires de Rebelo, the author of some short didactic novels, and many others which are mentioned by Barboss Machado and other bibli-
ographers.

At no period did historical composition in Portugal attain the elevation which it reached in Spain; the antient chroni-

cles are fewer, and not so well written; there is little or no local history, and as to general history, it seems to have been almost wholly consumed by the events and political transactions of that kingdom, the Portuguese possess none but the incomplete work of Brito. As might be expected, the events of India formed the fa-

vorite subject of the Portuguese historians of the sixteenth century. At the head of these stands Joao de Barros, whom the Portuguese have called their Livy, and whose historical labours well deserve an ample notice as a review of Portuguese literature. He was born at the be-

ginning of the sixteenth century, and died in the year 1570, at the age of seventy-four. Having been appointed by John King III. to the post of treasurer to the Indian de-

partment, he devoted his whole life to the collection of his great historical work, which he divided into decades, and published under the following title, 'Asia de Joao de Barros, do feitos que os Portuguezes fizeram no descobrimento e conquista dos mares e terras de Oriente,' Lisboa, 1553. Barros died in the first decade of his work; but he succeeded him in his office, wrote the remaining five, of which were printed at Lisbon, and two, still inedited, are preserved in manuscript in the library of the British Museum. The works of Barros are of no importance comparably with those of Castanheda, the author of another history of the discovery and conquest of India by the Portuguese, the first edition of which appeared at Coimbra in 1582-61. This work was reprinted at Lisbon in 1577, with the old orthography. A diffuse Chronicle of King Emmanuel, published about the same time by Damião de Góes, is more valuable for the fact which it contains than for the style. The Life of the great Affonso de Albuquerque, by the author of the 'Memorias de Portugal,' seems to be a mere compilation of the works of Albuquerque, and the biographer attained a higher degree of historical excellence. He was educated at Rome, where he seems to have early conceived the idea of writing a complete history of his native country. On his return to Portugal he entered the convent of Alc-

base, near Lisbon; and, after living for some years in the forty-seventh year of his age, without having accomplished the object to which he so nobly aspired. The two volumes of this work entitled 'Monarquia Lusitana,' which contains only the annals of the first 100 years of its, the convent of Alcobaça, and the second convent of Alcobaça, in 1597, the second at Lisbon, in 1649. Brito was likewise the author of a smaller historical work enti-
tled 'Elogios dos Reys de Portugal.' Much that is really valuable for the early history of Portugal may be gathered from the collection entitled 'Espeias sagradas,' Med., 1754-1801,
by Father Enrique Flores who published the 'Craniom Lusitaniae,' or 'The Cranial Anatomy of Portugal.' The other historians of Portugal who ought to be consulted are, La Clède, 'Histoire Générale de Portugal,' Paris, 1733, 2 vols. 4to.; Brandão, 'Monarchia Lusitana,' Lisbon, 1673-72; Lemos, 'Praefationes,' Lisbon, 1676-1804, 20 vols. 8vo.; Vasconcelos, 'Ancephalosia Actorum Regum Lusitanian,' Antwerp, 1621; and lately, the 'History of Spain and Portugal,' in Dr. Lardner's 'Cabinet Cyclopaedia.'

The origin of the Portuguese theatre is hid in darkness. The Portuguese Gil Vicente was a contemporary of the Spanish Torres Naharro, and the dramatic compositions of the Portuguese poet so far approximate to the ruder comedies of the former, that it is difficult to believe in the prevalence of a dramatic art in Portugal before the Portuguese poets acknowledged their own country the honour of the invention. Gil Vicente was really the father of the Portuguese theatre, and his plays, though not longer acted, are still read by people of taste. The editions of his works which his son published soon after his death, contain, in addition to sixteen autos, or spiritual dramas, three tragi-comedies, some farsas, and a few dramatised novellas, which are called comedias. In all these productions of Gil Vicente exhibits much dramatic invention and a true poetic genius. It is said of Brasmus that he learned Portuguese for the express purpose of reading Gil Vicente's plays in the original, but though Gil Vicente is undoubtedly the father of the Portuguese dramas, his history cannot begin with his name.桓de Cabral, the first dramatic author who composed dramas similar to the Spanish. His two chief productions however, 'Os Estrangeiros' (the foreigners), and 'Os Vihalpaldos' (the villagers), though full of comic and satirical elements, resemble in their style of Plautus and Terence, from whom he avowed himself an imitator. Ferreira, who lived after Cabral's death, is better known in the history of Portuguese literature. During the fourteenth and fifteenth centuries the Portuguese stage was inundated with translations of Spanish dramas, and by 1376 it appears that re-establishing the national drama was the object of the writer. With the sixteenth century the brilliant period of Portuguese literature passed away, and the connection with Spain and the influence produced at the beginning of the seventeenth century by the fantastic school of the Fugazes [correspond almost entirely naturalised Spanish literature in Portugal. Thus the names of Manuel Faria e Sousa, who died in 1649, and was the author of many works in verse and prose; of Jesuíto Cordeiro, a dramatic writer of some eminence; of Barbas Bascarel, the author of several poetical works printed at Lisbon in 1716; and of Manuel Severim de Faria, who wrote some political essays, and many more eminent authors, belong to the history of Spanish rather than to that of Portuguese literature, but it is not without interest to the student of the literatures of the Iberian Peninsula, looking at the independence of Portugal, though it called forth fresh displays of patriotism, had no influence on the literature of the country, which continued during the rest of the seventeenth and the greater part of the eighteenth century to follow the traces of the Spanish. Although the Academia Real das Sciencias de Lisbon, founded by king José Emmanuel in 1714, did much towards rousing the nation from its lethargy, and directing attention to the cultivation of its own drama, it is doubtful whether the time of the great historians, who himself was a great friend to scientific pursuits, that Portuguese literature revived and acquired a national tone. Francisco Xavier de Meneses, Conde de Eirê, the first president of the Portuguese Academy, was at one time considered as the most great Portuguese poet yet in manuscript, 'Branca ela conquista de Algarve,' has been printed. A monthly Review has likewise been lately started at Oporto. Scientific studies, especially mathematics, have entirely unsolicited, attract little attention. According to Balbi, among the three millions of Portuguese there are hardly five hundred readers of scientific books. The only comprehensive history of Portuguese literature in any European language is that of Frederick Bouterweck; but all the conditions of poetic art according to the principles of the French critics' first appeared at Lisbon in 1741, 4to. Contemporaneously with Eriyay lived Antonio de Lima Barros Pereira, who in 1720, published several religious an old, other pieces under the title of 'Florences.' A poet, named Alexandre Antonio de Lima, published in 1746, 'Merosfogus Mirauda,' being a collection of poems on various subjects, chiefly written in the Spanish language. Manoel da Costa, a Brazilian, whose complete works were published at Coimbr in 1768, 8vo., contributed for his own sakes, to the diffusion of good taste. About the same time the desire to cultivate a correct style in Portuguese poetry was fostered by new translations of some of the Latin classics. The 'Odes' of Horace were elegantly translated into Portuguese verse by Joaquim José da Costa e Silva (Lisbon, 1871); the 'Satires' of Sulpitia, by Antonio Luís de Azevedo (Lisboa, 1878); Ovid's 'Heroides,' by Miguel de Couto Guerreiro (Lisboa, 1789); and the 'Comedies' of Terence, by Miguel de Couto Guerreiro (Lisboa, 1789). The works of these translators, with those of Girão and Quixote, which was represented in 1733, and his 'Espadas, or the Life of Don Quixote,' may be put on a level with the best operas of Metastasio. Another poet, named Garçao, whose poetical works appeared at Lisbon in 1779, 8vo., contributed to the diffusion of good taste. About the same time the desire to cultivate a correct style in Portuguese poetry was fostered by new translations of some of the Latin classics. 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work, which comprises also the history of Spanish literature, was translated into English by Miss Ross (Lond., 1825, 8vo.).

But Buterwex's work, in the opinion of critics, is far from being either complete or accurate. Simonsen, in his *Litteratura da Mih del'Europe* (vol. iv.), has done little else than copy the German author. A short history of the Portuguese language and literature may also be found in the preface of Joaquim de Santa Rosa Vitorbo to his *Elucidatio das Palavras, Termos, e Frases que eu Portugal antiquamente so usavam*, &c., Lisbon, 1798, 2 vols. 8vo.

Those who wish to get an insight into Portuguese literature may consult Barbosa Machado, *Bibliotheca Lusitana*, Lisbon, 1741-39, 4 vols. fol.; *Pan e Sousa, Europa Portuguesa*, Lisbon, 1678-80, 3 vols. fol.; Velasquez, *Origines de la Poesia Castellana*, Malaga, 1754, 4to., and Dizé's Remarks upon that work; Sarmiento, *Obras Posthumas*, Madrid, 1778, 4to.; but above all, the *Memorias de Literatura*, published by the Royal Academy of Sciences in Lisbon, 1792-1836, 4to., and the *Catalogo dos Livros, que se não de ler para a Continuação do Dicionario da Lingua Portugueza*, a work which appeared in 1792 by order of the same Academy.

PORTULÆAE, a small natural order of polypetalous Exogens with hypogynous stamens; distinctly characterised by having two sepals, five petals, and a central placenta, whose seeds contain a curved embryo, lying upon mealy albumen. Their fruit is commonly one-celled, but the edges of the carpels are sometimes so much inflected as to press upon the placenta and divide the interior into cells. They are annual, perennial, half-shrubby or shrubby plants, with entire more or less succulent leaves, rarely furnished with stipules, and with flowers which are often very showy, although more frequently inconspicuous. Their prevailing colour is purple or scarlet. They occur in all the hotter or milder parts of the world, especially in dry exposed situations, for which their succulent leaves render them well-suited; the Cape of Good Hope is their favourite station.

**PORTUMNUS, Dr. Leach’s name for a genus of Brachyuran Crustaceans.**

**Generic Character.**—*External antennæ setaceous, very short, having their two first joints larger than the others, inserted at the internal canthus of the eyes. External jaw-foot having the third joint of their internal branch elongated, nearly conical and notched internally. First pair of feet large, equal, with the fingers of their piners rather long. Fifth pair of feet terminated by a flattened foliaceous and nearly lanceolate joint. Carapace rather flat above, with the anterior border arched and semicircular, and the posterior border nearly truncated, having its longitudinal diameter equal to the transversal diameter; orbita without fissures, eyes moderate.**

**Example, Portumnus variegatus. Locality.**—The Adriat:

*Portumnus variegatus, male.*

The species above figured appears to be identical with *Platyonychus latipes* of Milne Edwards, nor does there appear to be any sufficient reason for distinguishing the form generally from *Platyonycha*. [PORTUMNIDE.]

**PORTUNIDÆ, or Padding Crabs, a Family of Brachyuran Crustaceans, nearly allied to the Cancerians.**

M. Milne Edwards makes the *Portunidae* the second tribe of the family of *Cyclometopæ*, observing that it nearly corresponds to the genus *Portunus*, as it was established by Fabricius, and comprehends the greater part of the crustaceans which Latreille arranged in his division of *Brachyura* nageurs (Swimming Brachyura). M. Milne Edwards is of opinion that the closest analogy unites these animals to the Cancerians, from which they are hardly to be distinguished except by the peculiar conformation of their posterior feet; a character of much importance, inasmuch as it influences their manner of life, but which is found in a manner more or less marked in the species belonging to the greater part of the other natural groups of the section Brachyura.

The general form of the *Portunus*, says M. Milne Edwards in continuation, does not ordinarily differ much from that of the greater part of the Cancerians, but the carapace is always but little elevated, and sometimes has a lenticular shape. The orbits are directed upwards and forwards. The *internal antennæ* are bent back transversely, or at least very obliquely outwards, and the basiatrial joint of the *external antennæ* is partially lodged in a gap of the internal orbital angle. The third joint of the *external jaw-foot* is always wider than it is long, and sharply truncated or notched at its anterior and external angle for the insertion of the fourth joint.
posterior sella Turcica very narrow. The anterior feet are in general very elongated, the succeeding feet are sometimes natatory, and the posterior feet always so, their tarsus being lamellar; the second pair of feet are ordinarily more than once and a half as long as the carapace.

_Habits of the Tribe._—The crustaceans of this group are for the most part not very much swimmers and live often out at sea. They are vulgarly called Piddlers. The following genera are arranged under the tribe by M. Milne Edwards.

_Careusius._ (Leach.)

_Generic Character._—Carapace approaching in general form that of _Panopeus_, but little convex, although sufficiently elevated, and remarkably wider than it is long. The latero-anterior borders, which are deeply dentated, form with the orbital border a regular curvature which does not reach beyond the level of the middle of the genital region; latero-posterior borders very long and moderately oblique. The branchial regions very much developed and rounded anteriorly. Front advanced, horizontal, of moderate width. Orbits oval and directed forwards; there is a fissure at their upper border and one at their lower border; the gap at their internal angle lodges the base of the external antenna, the first joint of which is narrow and cylindrical and reaches to the front; their moveable stem is very long and inserted in the orbital gap. The internal antennæ are bent back in their nearly circular fossæ obliquely outwards. The buccal frame is a little wider backwards than it is in front, and the third joint of the jaws-feet is much dilated externally, and notched at its two internal angles. The _sternal plastron_ is similar to that of the _Portunus_, and so would be the feet, if it were not that the tarsus of the posterior feet is not much enlarged, and is of a flattened lanceolate form, though narrow, whilst that of the preceding feet is stiilform. The abdomen of the male is only composed of five segments. (M. E.)

Example, _Carcinus Marmor_. Cancer Marnus, of authors. _Crite engravi_ of the inhabitants of the coast of Normandy. The small common Crab hawked about London and eaten by the poorer classes. Length rather more than two inches.

_Platyonychus bipustulatus._

**Locality, Habits, &c._—Very common on the coasts of England and France, where it is found at low tide between stones and buried in the sand. This species runs on the beach with rapidity, and can sustain a long absence from the water. It is edible, though not much used as an article of food in England; but, during the summer, many are brought to Paris. Colour, dirty green; red when boiled. (Leach.)

_Generic Character._—Carapace narrower and more regularly convex than that of the other Portunus, and much smaller and more circular. Front very long and dentated. Latero-anterior borders a little curved and directed backwards, and, like those of the _Carcini_, the _Polybius_, and the _Portunus_; the great part of the _Portunus_, divided into five feet. Orbits not deep, and directed forwards. Internal antennæ bent back obliquely forwards, with their fossæ very imperfectly separated from the orbits. Disposition of the external antennæ different from that in the _Carcini_, the _Portunus_, the _Thalamites_, and the _Lupers_; their first joint, which is very small, is not soldered to the front, but is movable, like the succeeding ones, and is inserted between the lower orbital border and the antennary fossæ. The external jaw would be nothing remarkable, except in their third joint, which is narrower than in the greater part of the _Portunus_, and advances obliquely to the nucleus of the antennary fossæ. Sternal plastron oval, narrow, and very much narrowed posteriorly, and, as in the _Portunus_, its median suture occupies only the two last segments. The anterior feet are moderately and not very unequal; they are applied exactly against the buccal region, and entirely resemble those of the _Portunus_; the second pair of feet are rather longer, and have the tarsus flattened, a little enlarged, and of nearly a lanceolate form; the tarsus of the succeeding feet is also a little flattened, but rather stiilform than lamellar; the fifth pair completely natatory. (M. E.)

M. Milne Edwards divided the genus into the following sections and subsections:

Species having the frontal teeth unequal in number, one of them occupying the median line, and a single fissure at the superior orbital border.

_a._ Tarsi of the posterior feet of lanceolate form.

Example, _Platyonychus latipes_ (Cancer latipes, Penn.; _Portunus variatus_, Leach [Malar.]; _Platyonychus destructor_, Latr.). Length about an inch. _Locality._ Coasts of England and France. (Portunus._)

_b._ Species having the frontal teeth equal, and consequently not one on the median line, and two fissures at the superior orbital border.

Example, _Platyonychus ocellatus_ (Cancer ocellatus, Herbst; _Portunus pictus_, Soj.; _Platyonychus ocellatus_, Latr.). Length about two inches.

Polybius._ (Leach.)

_Generic Character._—Very nearly allied to _Platyonychus_, from which it hardly differs, except in the form of the feet, which are all natatory; those of the second, third, and fourth pairs are very much flattened, and terminated by a very large and lanceolate joint, which has the same form throughout. The posterior feet have the same form as those of _Platyonychus bipustulatus_, excepting that their third joint is extremely short and nearly globular. The _sternal plastron_ is wider, especially posteriorly, than in _Platyonychus_, but presents the same disposition as the ne-

Polybius Harziowii.

**Locality._—_The British Channel, where it appears to haunt at a distance from the coast._

Example, _Polybius Harziowii_. Length about two inches; colour brown. _Locality._ The British Channel, where it appears to haunt at a distance from the coast.

Portunus._ (Fabr.)

_Generic Character._—Species having the frontal teeth unequal in number, one of them occupying the median line, and a single fissure at the superior orbital border.

Example, _Platyonychus latipes_ (Cancer latipes, Penn.; _Portunus variatus_, Leach [Malar.]; _Platyonychus destructor_, Latr.). Length about an inch. _Locality._ Coasts of England and France. (Portunus._)
than it is long, but with its longitudinal diameter at least equal to two-thirds of its transversal diameter, and the contour of its anterior portion ordinarily more curved than it is in that genus. The front-orbital border occupies hardly more than the half of the transversal diameter of the carapace, and the front, which is narrow, advances always much beyond the insertion of the external antennae; and reaches in a remarkable manner beyond the level of the inferior border of the orbit, and the external angle of this cavity. The latero-anterior border of the carapace is delicate and armed with four or five large teeth; the orbits are oval. The antennary fossae are placed on the same level with the eyes, are transversal, and are separated from each other by a partition, the border of which is never prolonged into the form of a spine. The basal joint of the external antennae is but little developed, but completely separates the antennary fossa from the orbit, and is soldered to the front; the movable stem which succeeds to this joint would seem to spring from the internal angle of the orbit. The structure of the mouth presents nothing remarkable, but it is to be borne in mind that the third joint of the external jaw-feet is at least as wide as it is long, and that its anterior and internal angle is much truncated. The sternal piastron is much longer than it is wide, and much narrowed backwards; its median suture is not extended, except upon the last two rings. The first pair of feet are of moderate size, and, in general, one is much stouter than the other. The arm reaches but very little beyond the lateral border of the carapace; it always arms with spines as in Lapes. The carapace always presents on its internal side a great spiniform prolongation, and the hand, the length of which never equals that of the antero-posterior diameter of the carapace, is ordinarily moved a little inwards, so as to give the capability of an exact application against the anterior and inferior portion of the body. The three succeeding pairs of feet are nearly of the same length; but, nevertheless, the third or fourth pair are generally longest, and the second are shorter than the anterior pair; their last joint is styliform and canaliculate. The fifth pair are, on the contrary, very much enlarged at the end; their third joint is nearly of the same form as the preceding ones, and their last joint is lamellar, or oval, and canaliculate. The abdomen presents nothing remarkable, its disposition being nearly the same as in the preceding genera, except that it is less wide in the females and is always triangular in the males. The genus, as recognized, establishes the passage between the Carcini on one side and the Lapes on the other. (M. E.)

Habits, Locality, &c.—The Portunus, though essentially aquatic and swimming with much ease, are not met with far out at sea like the Lapes. Their haunts are near the shore, and at spring-tides they are often found during the ebb hidden under stones, in the small pools of water left by the sea. Some species inhabit still greater depths, on oyster-beds, &c., and they are never seen to run, like the Carcini, on the shore. When withdrawn from the water, they perish in a few hours. They are eminently carnivorous, feeding mostly on the dead bodies of animals which they find in the sea. Many of the species are edible, and all, with a single exception, inhabit the coasts of England and France. (M. E.)

M. Milne Edwards divides the species into the following sections and subsections.

a. Species having the front armed with very distinct teeth.
   a. Front armed with at least ten teeth or spines.
      Example, Portunus puber (Cancer puber, Linn.; Cancer
      velatus, Penn.). Length about two inches and a half.

b. Front divided into three lobes, of which the median lobe is more advanced than the lateral lobes.
   Example, Portunus corrugatus (Cancer corrugatus, Penn.; Portunus puber, Blainv.). Length about two inches. Colour reddish. Locality—Coasts of England and France; also in the Mediterranean.

b*. Front entirely, or divided only into two symmetrical lobes.
   bb. Latero-anterior borders of the carapace armed with five teeth only.
      Example, Portunus integrifrons (Cancer Navigator Herbst). Carapace pubescent. Length about two inches. Locality.—Indian Ocean. Lapes. (Leach.)

Generic Character.—The greater part of the Lapes are remarkable for the flatness and great transversal extent of their carapace, the diameter of which in that direction is more than double its length. Front nearly always narrow, and much less projecting than the lower border or external angle of the orbit, the antero-lateral border of the carapace very long, forming generally, with the anterior border, a very regular and open segment of a circle, and each of them armed with nine teeth, more or less projecting and spiniform; of these the last is in general much greater than all the others, and is directed straight forwards, though sometimes it does not differ from that which precedes it. Orbits oval, and directed obliquely forwards and upwards; their lower wall does not reach to the front, and there is, at the internal canthus, a large notch, which the basal joint of the external antenna fills; at the upper border of these cavities are two fissures. The fossels which lodge the internal antennae are not deep, and hardly covered by the front; the vertical border of which separates them is armed with a spiniform point, which is often prolonged beyond the anterior border of the carapace. Externally, these cavities are completely separated from the orbits, and the stem of the antenna, which on each side is inserted, is sufficiently short to be bent back there entirely. The basal joint of the external antennae is soldered to the inferior border of the superior and external angle of the front; it is not wide, and gives in-tection, by the extremity of its internal border, to the move-able stem formed by the succeeding joints, so that this stem, the length of which is considerable, would seem to spring from the internal canthus of the eye, and nothing pre-vents its being bent backwards to conceal itself in the orbital cavity. The epistome is extremely narrow, and the buccal frame is very nearly square, but, in general, wider forwards than it is behind. The third joint of the external jaw-feet is rather abruptly truncated forwards and inwards. The sternal piastron is nearly always tolerably convex longitudinally, very wide, and hardly closed (resserré) posteriorly; its median suture occupies the last three segments. The first pair of feet are very large, and always armed with a certain number of spines; the spines are elongated, and not remarkably curved inwards. The three succeeding pairs of feet are much shorter, and are all nearly of the same size; sometimes their terminal joint is slender, rounded, as it is in general. If elongated, it is flattened, lamellar, and natatory. In the first case the feet would appear to be specially destined for walking, whilst in the second their disposition is more favourable to swimming. The fifth pair are very strong, and consist of the wide and powerful last two joints; their third joint (or thigh) is in general stout, but very short, and pre-
sects scarcely any spines, as in Thalamita. The last joint is always oval. In the female the abdomen presents nothing remarkable, except that its length is very considerable; in the male its structure is the same as in the preceding genera, there being only five distinct pieces, the third, fourth, and fifth rings being soldered together; the first three segments are always very large, but at the level of the fourth there is a sudden narrowing, and the last three are narrower still. (M. E.)

Habits, &c. of the Genus.—The Lupae are Pelagic Crustaceans, living in the ocean, where they have been seen by many voyagers, and where they have no other apparent place of repose than the floating fuci. Their swimming powers are great, and Bosc remarked that they have the faculty of sustaining themselves at the surface of the water in a state of repose, without the execution of any visible movement.

This genus is divided by M. Milne Edwards, who gives the above summary of their habits, into the three following groups:

A. Species with the body very thick and convex above;
   first pair of feet stout, and not much elongated; the
   hand considerably shorter than the carapace.

Convex Lupae.

Example of this first subgenus, Lupus Tranquebaricus
(Cancer olivaceus, Herbst; Cancer serratus F. Forsk.; Portunus serratus, Rüpp.; Portunus Tranquebaricus, Fab.).

This, the largest Portunian known, is six or eight inches in length, of a greyish green, and inhabits the seas of Asia. A. Species having the body very much compressed; the first pair of feet stout, and but little elongated; the hand remarkably shorter than the carapace. Tarsi of the second, third, and fourth pairs flattened, lamellar, and nearly lanceolate.

Swimming Lupae. (Second subgenus.)

* Species having the last lateral spine at least twice as large as the preceding, and the front projecting but little.
  a. Median teeth of the front projecting but little, and
     sometimes hardly visible.
  a*. Upper border of the orbit armed with a spine.

Example, Lupus pelagica (Cancer pelagicus, Linn.; Cancer reticulatus, and Cancer Cedo Nulli, Herbst; Portunus pelagicus, Fab.). Length from three to four inches; colour greyish-green with yellow spots. Locality—The Red Sea and the whole Indian Ocean.

**Upper border of the orbit without any spiniform prolongation.

Example, Lupus sanguinolenta (Cancer sanguinolentus, Herbst; Cancer pelagicus, var. and Portunus sanguinolentus, Fab.). Length about six inches. Carapace with three large bright red spots on the back part of the carapace. Locality—The Indian Ocean.

**Median teeth of the front small, but projecting.

Example, Lupus cribarius (Portunus cribarius, Lam.). Length three inches; colour yellow, with numerous whitish spots. Locality—Coasts of Brazil.

Lupus pelagica.

B. Species having the last spine of the latero-anterior border of the carapace scarcely longer than the others.

Example, Lupus spinimanus (Portunus pelagicus and Portunus spinimanus, Latr.). Length from three to four inches. Locality—Coasts of Brazil.

b. External border of the arms spined.

Example, Lupus lobifrons. Length one inch. Locality, The East Indies.

C. Tarsi of the second, third, and fourth pair of feet narrow and styliform.

Walking Lupae. (Third subgenus.)

a. Species having the last tooth of the latero-anterior border of the carapace resembling the others.

b. Teeth of the latero-anterior borders alternately large and small.

Example, Lupus rubra (Ciri apos, Marc.; Portunus rubra, Lam.). Length about two inches. General colour reddish; extremity of the claws black. Locality—The coasts of Brazil.

a*. Teeth of the latero-anterior borders of the carapace resembling each other.

Example, Lupus granulata. Length about an inch. Locality—The Isle of France.

b. Species with the last tooth of the latero-anterior border of the carapace at least twice as large as the preceding.

b. Median teeth of the front much more projecting than the lateral teeth.

Example, Lupus Sebae (Cancer martinus setiformis, Soba, Mus., iii. p. 20, f. 9, copied by late Mr. Leech, in Evercyl, p. 272, f. 6, under the name of Portunus sanguinolentus. Size about the same as L. granulata. Locality—Coasts of Brazil. (M. E.)

b. Median teeth of the front less projecting than the others.

bb. Hands large, of the ordinary form, and shorter than the transversal diameter of the carapace.


b. Hands filiform and of great length, being nearly once and a half the transversal diameter of the carapace.

Example, Lupus Forcips, Lupa Forcips, Leach; Portunus Forcips, Latr.). Length about an inch. Locality—The Antilles.

Thalamita. (Latr.)

Generic Character.—Carapace in most of the species characteristic; but in some it gradually approaches that of the Lupae; in fact, sometimes it has the form of an elongated square; its transversal diameter is nearly double the length, and its fronto-orbital border forms with the latero-anterior borders a nearly right angle; in other cases it is nearly hexagonal, its six borders form nearly equal angles, and its width only exceeds about half of its length. The front is always very wide, projecting, and at least as much advanced as the inferior border and external angle of the
The latero-anterior borders of the carapace are more or less oblique, but always form with the fronto-orbital border a very strong marked angle, where there are from four to seven teeth, the last of which is never remarkably larger than the others. The eyes are stout and short; the orbits oval, and completely separated from the antennary fossae; the upper border of the latter presents two small fissures, and their angle is often nearly as distant from the median line as the angle which terminates behind the latero-anterior border. The internal antennae bend back completely in their fossae; and the inter-antennary partition projects but little. The basi-ocular joint of the external antennae is in general very wide, and always soldered to the front throughout the whole extent of its anterior border, presenting externally a more or less considerable projection which separates the orbit from the point of articulation of the movable stem of those appendages, and which is very long, and inserted sometimes very far from the orbital cavity. The epistome is very distinct and of a lozenge-shape. The buccal frame is very wide, and the external jaw-feet are disposed nearly as in the Portunus. The sternal plastron is very large and its median suture extends upon the last three rings. The anterior feet are very large, and cannot be concealed under the anterior portion of the body, as they are in the Portunus and Platysomus; their third joint is spiny anteriorly and reaches much beyond the carapace; the hand is in general rough, with a considerable number of teeth, and is at least as long as the carapace. The three succeeding pairs are much shorter, and diminish in length successively; their tarsus is, in general, styliform. The fifth pair are, as ordinarily, the shortest of all, their third joint is nevertheless elongated, and at the extremity of its anterior border there is a rather strong spine, a disposition which never exists in the Portunus or the Platysomus, and is extremely rare in the Lupus; towards their termination those feet become very wide, and their tarsus is oval. The abdomen presents nothing remarkable. (M. E.)

M. Milne Edwards divides the genus into the following sections:—

1. 

Fronto-orbital border not occupying more than two-thirds of the width of the carapace, and forming a rather open angle with the latero-anterior borders, which are armed with six or seven teeth.

Hexagonal Thalamita.

2. 

Fronto-orbital border occupying nearly the whole width of the carapace, and forming a nearly right angle with the latero-anterior borders, which are armed with four or five teeth.

Quadri-lateral Thalamita.

The latter form the first subgenus in M. Milne Edwards’s arrangement.

a. Species having the front entire or divided into lobes, but with no teeth.


Locality—The Red Sea.

Thalamita Chaptalii.

b. Species whose front is armed with deeply cut and flattened teeth.

Example, Thalamita crenata. (Portunus crenatus, Latr. Thalamita Admet, Guerin, Icon. Cr., pl. 1, f. 4.)

2nd Subgenus. (Hexagonal Thalamita.)
a. Species having the latero-anterior border of the carapace armed with six teeth.

a. Last lateral tooth nearly the same size as the preceding. 

a*. Anterior feet armed with spines, but without elevated granulations.

Example, Thalamita crucifera (Portunus crucifera, Fabr. and Latr.; Cancer secedentatus, Herbst?). Length from three to four inches; colour reddish with yellow spots and bands, the median markings resembling a cross. 

Locality—The Indian Ocean.

Thalamita Crucifera.

a**. Anterior feet presenting between the spines with which they are armed, a great number of tubercles or elevated granulations.

Example, Thalamita Natator (Cancer Natator, Herbst; Portunus sanguinolentus, Bosc). 

Locality—Indian Ocean.

Thalamita Natator.

aa. Last lateral tooth stouter and much more project- ing than the others.
Example. Thalamaia Callianassa (Cancer Callianassa, Herbst). Length about an inch. Locality—Indian Ocean.

b. Species having the latero-anterior border of the carapace armed with seven teeth, two of which are rudiments.

Example. Thalamita erythrodaactyla (Portunus erythrodaactyla, Lam.). Length 24 inches. Locality—Australasia. Polyphemus. (Lam.)

M. Milne Edwards lately observed, that all of the Por- 

tunians the Polyphemus have the most remarkable appear-

cances, and characters the most easy to seize. The enormous length of their ocular peduncles, which are very short in the other Swimming Brachyura, is sufficient to distinguish them at first sight.

Eye, orbit, jaw-foot, &c., of Polyphemus.

Generic Character. — Carapace of a very much elongated quadrilateral form, the two lateral sides of which are strongly truncated, and with its antero-posterior diameter not equaling the half of its transversal diameter. Its anterior border, which is nearly straight, is about four times as long as the posterior border. The front, or space comprised between the two eyes, is linear, and on each side the anterior border of the carapace is hollowed throughout its length into a very long and deep gutter, which constitutes the orbits; the external angles of these ocular cavities separate the anterior border of the carapace from its lateral border, the direction of which, very oblique, is the same throughout its length. The eyes are carried on delicate peduncles of extreme length; and these osseous stems are inserted near the median line of the front, and carry at their extremity the second ocular piece, whilst in the Ocyopodians, where the eyes are also very much developed, it is on the development of this second piece, and not the first, that the length depends. The ocular bulb is not very large, and reaches the lateral extremity of the carapace. The internal antennae are situated below the origin of the eyes, a disposition which is met with in no other Pontunian, and their stem cannot bend itself back into the cavity where they are lodged. The external antennae are also below the eyes; they are placed between the antennary fossae and the orbits, at the external side of the first, and their basitary joint is sol- 

dered with the borders of these two cavities, so as to complete their walls and to separate them from each other; the moveable stem which terminates these antennae is formed of two small peduncular joints and of a slender and rather short multiarticulate filament. The buccal frame is extremely wide, and is only separated from the antennary fossae by a very delicate border; its anterior border is about twice as long as its lateral borders, and these last are directed obliquely backwards and inwards. The external jaw-feet leave a considerable space between them, and their third joint is nearly as wide as it is long; but it is so trun-

gated forwards and inwards, that its form has been com- 
pared to a hatchet, the extremity of whose trenchant edge

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Example. Polyphemus vigilis (Portunus vigilis, Fair Polyphemus vigilis, Linn.). Length from two to four inches. Locality—Indian Ocean.

Fossil Pontunians.

M. Milne Edwards remarks that the fossil crustacea seen figured by Davied (Catal. 4, l. iii., pl. 3, f. 6), and described by M. Desmarest under the name of Portunus leucodon (C. foss. p. 86, pl. 6, f. 1, 3), bears some analogy to Lupaea Tranquebarica. The Polyphemus Depraecon of the work last quoted appears, M. Milne Edwards observes, to differ particularly from Polyphemus vigilis by the absence of the sharp spines which terminate the lateral angles of the carapace in the latter; but as the internal cast only is known, he remarks that it is very possible that this nega-
tive character does really exist.

PORTUS, FRANCIS, a celebrated philologer, born in 1511, in the island of Crete. He lost both his parents at an early age, and was sent by a friend to Padua, where for six years he studied literature and philosophy. After the death of his friend and benefactor he repaired to Venice, where his talents procured him the directorship of the school for young Greeks. But owing to his inconsiderate expressions on matters of religion, he soon lost his place. He now went to Modena, where in 1536 he was made professor of Greek literature, after having signed some articles of faith, to which at first he strongly objected. He held this office for six years, at the end of which he changed Modena for Ferrara, and undertook the education of the sons of the Duke of Ferrara. In this capacity he also carried on his correspondence with Calvin, whose doctrines this lady had secretly adopted. During his stay at Ferrara, Portus was made a member of the Academy of the Filaret. After the death of his husband, the duchess returned to France, and Portus, from fear of persecution for his religious opinions, went to Geneva, where he obtained the rights of a citizen and a professorship in the University in 1572. Here he spent the remaining years of his life, partly in ful-
filling the duties of his office, and partly in writing those works by which he established his reputation as a scholar and a critic. He died at the age of 103.

Portus has written explanatory and critical commentaries on various ancient authors, such as Aristotle ('Rhetoric'), Apollonius of Rhodes, Homer, Pindar, on the 'Greek Anthology,' some works of Xenophon, on Thucydides, and others. He translated also the 'Grammar of Alexandria,' 'De Syntaxi, seu Correctione Orationis,' the 'Psalms,' the hymns and letters of Sennius, and the oracles of Gregorius Nazanzenus. His son Aemilius Portus published, in 1584, six dissertations and some other works of his father. It is said that there are still some MSS. of Francis Portus in the library of Euse, containing commentaries on several orations of Demosthenes and on Sophocles, which have never been printed.

PORTUS, AEMILIUS, the son of Francis Portus, was born, about 1550, at Ferrara. In his youth he was instructed by his father in the ancient languages and literature. After the death of his father he left Geneva, and in that same year (1581) he was made professor of Greek at Lausanne, where he remained for ten years, devoting his leisure hours to preparing new editions of ancient authors. In 1592 he was invited to the chair of Greek literature in the university of Heidelberg, of which he afterwards became one of the greatest ornaments. He died at Heidelberg in 1610, at the age of 60 years.

The numerous works of Aemilius Portus consist of commentaries, translations, and original works. Among the first we may mention his Commentary on Pindar (1598), his edition of Euripides, with notes of Cantor, Brodaeus, Stibili- nus, and some of his own, Geneva, 1607; Aristophanes, Geneva, 1607; Aristides, Geneva, 1607; Apollonius Rhodius, made by Aemilius (the Commentary by his father), Spire, 1598; Homer's Iliad, Xxenaphon, and Thucydidès. He
translated into Latin the work of Proclus, 'De Theologia Platonis,' published at Hamburg in 1618; the Lexicon of Suidas, Colonia Allobrogum, 1619; a reprint appeared at Geneva in 1630. He also translated Theucides and the 'Rudi,' An epigram of Dionysius of Halicarnassus. The following are the original works of Aemilius Portus: 'Oratio de variarum Linguarum usu, necessitate, præstantiaque,' Casel, 1611, 4to; 'Dictionarium Ionicum Graeco-Latinum, quod indicem in omnes Herodoti libros continet,' Casel, 1604; and a reprint was issued at Oxford in 1699, 'Dictionarium Donae Graeco-Latinum, quod Theodori, Moschi, Blanis, et Simmiae variorum opusculorum interpretationem continet,' Frankfurt, 1644; 'Pinarum Lexicon, donum donatum Domini Doni, in posticus et etiam verba pharseo que none vulgares et in alia lexieis omisse declarantur,' Hanau, 1644; 'De prisci Graecorum Computatione,' Heidelberg, 1644; 'De Nihilii Antiquitate et multiplex Potestas,' Casel, 1609.

PORTUS (Napitus), the name given by Greek writers to several Indian kings. From its frequent occurrence, it appears to have been the name of a family or tribe, rather than the proper name of an individual. Some modern writers suppose it to be the same word as the Sanskrit pura, 'a citizen,' but Lasen (Pentapothamia Indica, p. 17, 18) with more probability connects it with Ipurus, or descendants of Puru, which we know, from the ancient writings of the Hindoos, to be the name of a king. Alexander, in his invasion of India, met with two different kings of this name, one of whom ruled over the country between the Hydaspes and Aecines, and the other over the countries of the Aecines and Arantes (Hein.) The former made a formidable resistance to Alexander, but was conquered. Alexander however treated him with respect, and restored to him his kingdom, with enlarged limits, (p. 209) The other Purus did not wait the arrival of Alexander, but fled to the kingdom of the Prasii. His dominions were given to the Purus whom Alexander conquered. (Arrian, Anab. v. 29, 20.) Purus however did survive Alexander. He was treacherously killed by Eudamus, n. c. 317. (Diod. Sic. xiv. 14.)

Strabo mentions (x., p. 686) that an Indian king of the name of Purus sent an embassy to Augustus.

POLEN (Napitus), a province of the Prussian monarchy, was formerly a part of the kingdom of Poland. On the first partition of Poland in 1772, the part of Poland to the north of the Netze, and on the second partition in 1795, the remaining part except the share of Prussia: this, together with the part of the kingdom of south of the Vistula, as far as Warsaw, acquired by Prussia on the third partition, received the name of south Prussia. In 1807 all south Prussia was taken from Prussia by the Congress of Vienna; but in 1814, at the Congress of Vienna restored the original province of Polen to Prussia by the name of the grand-duchy of Polen. It lies between 51° 10' and 53° 32' N. lat. and between 15° 7' and 22° 30' E. long. It is bounded on the north by the province of Prussia, on the east by the kingdom of Poland, on the south by Silesia, and on the west by Brandenburg. The area is 12,250 square miles, divided into the two governments of Bromberg and Posen.

Face of the Country, Soil, Climate, &c.—This province is perfectly level, except the banks of the Warslia in the circle of Oecernik, which are rather more elevated, and there is here and there a hill on the frontiers of Silesia. The soil is partly marsh, partly fertile, and partly sandy, but nearly the soil is mixed with more solid elements, especially loam, that the soil may be considered as tolerably good. The most fertile parts are the country on both sides of the Warslia, and the town of Notabruch. A low tract on the river Netze, about 90 miles in length, and not above 3 in breadth, which, having been completely secured by dikes by Frederick II., is now converted into fine corn-land and meadows, with few villages in it. Under the government, there were only unprofitable bogs and thickets. The river Warslia, which traverses the province in its whole breadth, and the Netze, are navigable. The Netze is connected by the Bromberg canal with the Baltic, which has been made navigable, and falls into the Vistula, which only touches the frontier for a short distance above Thorn, but is of great advantage by opening a communication with the Baltic. Besides these there are several other rivers in the province is very well watered. The Bromburg canal, which is twenty miles long, was constructed under Frederick II., at the expense of 200,000 dollars. There are several lakes, the largest of which is the Goppoo lake. The air is pure and healthy.

Natural Productions.—The chief productions are corn of all kinds, barley, hemp, rye, hemp, tobacco, hops, fruit, and timber; the common domestic animals, game, poultry (especially geese), fish, and bees. There are limestone, freestone, saltpetre, and bog-iron, of which no mention has been made. Lycopodium, or the large lycopodium, is very common in the forests. The game is very careless manner. The country suffered very severely by the late wars, and this, with the changes in the government, checked the agricultural improvements, which had been successfully commenced under the Prussian government. Since the invasion of Silesia, the state of things has been gradually established. 'The common people,' says Dietrieci, 'live in a very simple and poor manner; but it is undeniable that, especially of late, a considerable improvement has taken place in their condition. Great public works, one of which is the citadel of Posen, the organization of the public schools, and the regulations of the relations of the landowners and the peasants, ameliorate the condition of the common people.'

Trade and Manufactures.—The exports consist chiefly of corn, especially wheat, a large quantity of wool, timber, cattle, tallow, hides, wax, honey, bees' and feathers. Manufactures were first introduced by German settlers, who settled in the province from the time of Frederick I., and founded several towns on the frontier, such as Rawitsch, Prusisdt, Bojasnow, Lissa, Kosche, and Mestries. These towns and several other manufacture cloths of such good quality, that they are exported to the neighboring parts of Poland and Dutch. Formerly considerable quantities of these cloths were exported to Russia; but the rigorous prohibitory system adopted by Russia has nearly put a stop to all trade between the two states.

Population.—The population amounted, in 1837, to 1,169,706 inhabitants, of whom the majority are Roman Catholics, 230,000 Protestants, and 70,000 Jews. The town population amounts up to 20,000 in Posen. Though much has been done of late years, education is still very backward in this province. The great mass of the population are Poles, and Polish is the general language; there are however many strangers, especially Germans, who inhabit almost all the towns on the frontier of Silesia and Brandenburg, and whose numbers were stated, twenty years ago, by Hassel, at 140,000.

The principal towns besides the capitals [Bromberg; Posen] of the two governments are:—1. In the government of Brandenburg, Gneisen, an old ill-built town, with 6000 inhabitants, of whom 1800 are Jews; it is the see of a Roman Catholic bishop, formerly the primate of Poland. Inowratzlaff, a town of an ancient establishment, a Roman Catholic church, two monks' convents, one nuns' convent, and a seminary for Roman Catholic clergy. The inhabitants manufacture some woolen cloth and linen, and there are many ironworks and distilleries. Inowratzlaff, an ill-built town, on a fertile plateau, with 2100 inhabitants, who have considerable distilleries of brandy, breweries, and saletpe works. There are five Roman Catholic churches, a Franciscan convent, and a synagogue. Schonianke, a well-built town, with 4000 inhabitants, who have a considerable manufacture of woolen cloths. 2. In the government of Posen, Lissa, or Polish Lissa, has 6857 inhabitants, of whom 3470 are Jews. This is one of the chief manufacturing towns of the government. The town, which has a palace, a handsome market-place, a gymnasion, four Roman Catholic churches and one Lutheran church, a large synagogue, and extensive manufactories of woolen cloth, linen, and leather, is a seat of trade (as a substitute for coffee), and carriages. The trade is very flourishing. Inowratzlaff, situated in a marshy spot near the frontiers of Silesia, has 8316 inhabitants (1786 Jews), who are mostly Germans. It is very well and regularly built, has a gymnasion, a fine Lutheran church, and a Lutheran town-hall, and there are manufactories of woolen cloth, linen, leather, tobacco, and earthenware. Meserits, situated in a beautiful and fertile country on the river Obra, has 4500 inhabitants, chiefly Germans, of whom 1150 are Jews. The town, which has a large fort, is very considerable. Krotoschin has 6327 inhabitants, of whom 2213 are Jews. They have manufactories of woolen cloths, linen, tobacco, and sugar. There are also tanneries, dyeing-works, and distilleries. This town has both a Lutheran and a Roman Catholic church, and a synagogue, with Lu-
POSIDONIUS (Hροσίονος), a Greek philosopher, was a native of Apameia in Syria, but a citizen of Rhodes, where he is said to have died (Plut., libr. de mort. vir. et temp. reg. 19, lib. de nat. temporum, 5. c. 422, p. 575. E.)

For further information respecting the opinions and writings of Posidonius, see 'Posidonii Reliquiae Doctrinæ.' Colleget atque illustravit Janus Bake. Accedit D. Wittenbach Abatiosi, 1810.

There was another Posidonius of Alexandria, who was a pupil of Zeno, and consequently was prior to Polybius. Suidas however, by mistake, ascribes to this Posidonius a continuation of Polybius, in fifty-two books, which is evidently the work of the younger Posidonius.

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POSS COMITATUS (literally, the power of a county) comprehends all able-bodied males within the county between the ages of 15 and 70 years. All such persons, with or without an exception, are bound to aid the sheriffs in all matters that relate to his office; and he is liable if he neglects to avail himself of that invitation. The force of any invitation, rebellion, riot, &c., or breach of the peace within the county, all such persons, on pain of fine or imprisonment, are bound to attend on him being charged by him to do so, and to assist in opposing and suppressing the same. They may be summoned as a witness in any suit in case of resistance. The power of the county may also be raised when necessary for the purpose of apprehending traitors, felons, &c., and that even within particular franchises. It is exercised to aid the sheriff, and at the expense of the person in whose case the resistance occurs.

DEFINITION. In endeavouring to explain the legal meaning of this term, we shall commence with the following propositions: 1. To possess, is to have the right of Possession (Das Recht des Besitzes, Giessen, 1827).

- All the definitions of possession are founded on one common notion. By the notion of possession of a thing we mean an enjoyment of the property in extent, the exercise of which not only are we ourselves physically capable of operating upon it, but every other person is incapable. This condition, which is called detention, and which lies at the foundation of every notion of possession, is a juridical notion, but it has an immediate relation to a juridical notion, by virtue of which it becomes a subject of legislation. As ownership is the legal capacity to operate on a thing at our pleasure, and to exclude all other persons from using it; it is the condition, the essence of ownership, and it is the natural state which corresponds to ownership as a legal state. If this juridical relation of possession were the only one, everything concerning it that could juridically be determined, would be comprehended in the following positions:—the owner has the right to possess; the same right belongs to him to whom the owner gives the possession; no other person has this right.

- Now, in the case of possession, as well as of property, determines the mode in which it is acquired and lost; consequently it treats possession not only as a consequence of a right, but as a condition of rights. Accordingly, in a juridical theory of the law, in the case of possession (ius possessionis) that we have to consider, and not the right to possess (called by modern jurists ius possidenti), which belongs to the theory of property.

- We now pass from the notion of mere detention to that of juridical possession, which is the subject of this treatise. The object of the first part, which is the foundation of the whole investigation, is to determine this notion formally and materially. Formally, by explaining those rights which presuppose possession as a condition, and consequently determining the signification which the non-juridical notion of detention obtains in jurisprudence, in order to its being consonant with the juridical notion of possession; materially, by enumerating the conditions which the Roman law requires for the existence of possession, and consequently the positive modifications under which detention can be viewed as possession.

- The formal determination of the notion by force of which alone possession can become a subject of jurisprudence, is divided into three parts:—first we must determine the place which possession, as a legal relation, occupies in the system of Roman law, then enumerating the rights which the Roman law recognizes as a consequent of possession, and we must also examine the rights which are improperly considered rights of possession. It will then be easy to understand the position of the possession, which is no longer considered as a right, and whether as a jus in re. The first and simplest mode in which possession appears is a system of jurisprudence consists in the owner having the right to
of the matter only extends to the establishment of the rule of law in general, and not to the legal reason for any particular case of possession. This legal reason is founded rather in the protection against the formal injury, and accordingly possessorial interdicts have a completely obligatory character, and can never be viewed as provisional vindications.

The special object of SAVIGNY's essay may be collected from these passages. The legal principles here developed are almost identical with those which preceded. There will always be a distinction between the right to possess, which is a legal consequence of ownership, and the right of possession, which is independent of all ownership. The owner of a thing may not have the right to possess it, but he has a right to demand possession of the possession, which he must prosecute by legal means. The possessor of a thing, simply as such, has rights which are the consequences of his possession; that is, he is legally entitled to be protected against forcible ejection or fraudulent deprivation; his title to a continuous of his possession is good against all persons who cannot establish their right to the thing, and this continued possession may, according to the rules of positive law in each country, become the foundation of ownership. It must also be the intention to possess, or the 'animus possidenti.' Consequently the 'animus possidenti' consists in the intention of exercising ownership. But this ownership may either be a person's own ownership, or another's ownership, in which case there is such 'animus possidenti' as makes detention amount to possession. In the former case a man is a possessor, because he treats the thing as his own: it is not necessary that he should believe it to be his own.

In order to lay the foundation of possession as such, there must be detention, and this must also be the intention to possess, or the 'animus possidenti.' Consequently the 'animus possidenti' consists in the intention of exercising ownership. But this ownership may either be a person's own ownership, or another's ownership, in which case there is such 'animus possidenti' as makes detention amount to possession. In the former case a man is a possessor, because he treats the thing as his own: it is not necessary that he should believe it to be his own.

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This means that, in the case of a chattel, possession is a presumption of ownership; but that possession of land is not; at least not a presumption of a freehold interest. Still it is so far a presumption of some interest, that if a man buys an estate from the owner, knowing that another person is in possession of it, he is no more bound to enquire interest the person in possession may have in the land; and therefore if the person in possession has a prior contract with the owner for purchasing the land, the second purchaser but one to the first, 

estates, present possession, and Wm. is not section 27), and possession, as it is often a matter of great nicety to determine whether there has been possession by the purchaser, either as the condition or means of establishing his ownership, or for the purpose of ascertaining from what time a thing has ceased to be to one person's possession and come into the possession of another.

Questions as to this matter often arise in cases of loss, of insolvency of a vendor, &c., when the chattel is transferred from the vendee to the vendor by whom it is sold, it is of necessity during a certain time on its journey, or as our law expresses it, in transitu. The solution of questions of this kind, which often occur in a commercial country, is sometimes difficult, though many general principles are deducible from judicial decisions. The right of the vendor to stop the thing after it has commenced its journey, continues till the time at which the vendee is legally considered to have acquired the possession of it.

It is remarked by Savigny (Das Recht des Bestzes, p. 185), 'that in the whole theory of possession nothing seems easier to determine than the character of corporeal appre-hension which is necessary to the acquisition of possession. By this fact all writers have understood an immediate touching of the corporeal thing, and have accordingly assumed that there are only two modes of apprehension: laying hold of a moveable thing with the hand; and entering with the foot on a piece of land. But as many cases occur in the Roman law in which possession is acquired by a corporeal act, without such immediate contact, these cases have been viewed as symbolic acts, which, though the traditional medium of actual action, are considered by some as a mere real apprehension.' After showing that this is not the way in which the acquisition of possession is understood in the Roman law, and that there is no symbolic apprehension, he concludes, that that which is possessed in possession may in some cases be referred to the same corporeal act, he determines what it is, in the following manner:

'A man who holds a piece of gold in his hand is doubtless the possessor of it; and from this and other similar cases has been abstracted the notion of a corporeal contact generally as the essential thing in all acquisition of possession. But in the case put, there is something else which is only accidentally united with this corporeal contact, and possession is not obtained by touching the thing, and to exclude all others from doing so. That both these things concur in the case put, cannot be denied: that they are only accidentally connected with corporeal contact, for the hand has not been impressed without the contact, and the contact without the possibility. As to the former case, he who can at any moment lay hold of a thing which lies before him, is doubtless as much under the like master of it as he is possessed of it. As to the latter, he who is bound with cords has immediate contact with them, and yet one might rather affirm that he is possessed by that than that he possesses them. This physical pomposity, that a thing which as a fact be contained in all acquisition of possession: corporeal contact is not contained in that notion, and there is no case in which a fictitious apprehension need be assumed.'

This clear exposition of a principle of Roman law appears to apply to a case which we have received any careful elaboration, for the principle is in its nature...
general. It may be that the expounders of our law have not always clearly seen this principle, even when they have had to recognize it; and it may be that they have not always acted upon it. Still it will appear from various cases that the physical possibility of operating on a thing is the essential character of the acquisition of possession in English law. In the case of Ward v. Turner (2 Vez., 431) it was held by Lord Hardwicke that in the case of the possession of a case of 'donatio mortis causa,' and delivery of receipts for South Sea Annuities was not held sufficient to pass the ownership of the annuities. In his judgment, Lord Hardwicke laid down several rules on the subject of possession, one of which was, 'that the right of possession is strictly personal, and is not transmitted to others by the mere delivery of the possessory thing, unless by the terms of a conveyance.' In the case of Savigny v. Wachs, &c., has been allowed a delivery of the possession, because it is the way of coming at the possession, or to make use of the thing; and therefore the key is not a symbol, but the means of getting at things which are locked up, and therefore the delivery of the key of such things, when they are sold, is a delivery of the possession. (See the cases in the Digest cited by Savigny, p. 209.)

In a case (Williams v. Bosanquet, 1 Br. and B. 238) where a lease had been assigned by the lessee to a mortgagee as a security, the mortgagee was held liable to pay the rent, though he had never taken actual possession of the premises. The safest ground of this judgment seems to be that the contract of the lessor is with the lessee and his assignee, and not with the mortgagee; therefore a contract between the lessor and the mortgagee; and as the lessee is liable to pay the rent though he never takes actual possession, so must the assignee be liable even if he is entitled to the possession of the premises. Where the mortgagee or not, makes no difference as to this question. But it was also stated in the judgment (p. 263) that 'legal possession,' that is, acceptance of the thing assigned by accepted, and 'actual possession, or 'equivalent to actual entry; that is, to actual possession. This is an expression used for the purpose of preventing the Statute of Limitations from running against the assignee, for the statute views the commencement of such legal possession as the commencement of the time when the assignee ought to take actual possession.

Opinions may vary as to what shall be the evidence of that physical possibility which is the characteristic of appre- hensibility; but it is the possibility which is appurtenant to which particular cases must be referred. 'All posses- sion then depends on the consciousness of unlimited physical dominion; in order to which there must be the will (capacitas delectandi) and the means (possibilitas delectandi) of the physical conditions of that possibility (corpus), the conscious-ness of which is necessary.' (Savigny, p. 228.) Possession may be acquired by a man's agent, as well as by the man himself who wills to possess.

The animus which is necessary to the possession may often be inferred from the acts. When, in the case supposed, the vendor gives the key to the buyer, it must be assumed that delivery is intended on one side and the taking of possession on the other. If a man buys a case of wine in a merchant's cellar, and puts his mark on it, this is no taking possession, but the object is to identify his property; if he marks timber lying in an open place, which he has bought, and takes it away to sell, this is taking possession.

The principle seems to apply to choses in action. The question often arises in the cases of a wife's choses in action, whether shall be considered a reduction of them into possessio- nes by the husband. In this case it is not necessary to a reduction into possession, that the husband shall actually have material contact of the thing; but he must have acquired such a power over it as will prevent any other person from getting it. If he has not done this, he has not acquired the almost unbridled right which a husband has to reduce it to his own use. The instant that he transfers it into her name, in which it continues till her husband's death, it devolves to the wife if she survives him. It seems that if a husband can sue alone for his wife's chose in action (which he can do if it accrues to her during the coverture), and if he obtain a judgment before he dies, that will entitle his personal representatives to the benefit of it; and probably a decree of a court of equity in favour of a hus- band, in right of his wife, would, if he dies before he receives the thing, entitle the husband's personal representa- tives to the benefit of the decree. ("Forbes v. Phipps, 1 rotten, 502; Jarman, Settlements, 'Precedents," vol. ix., p. 92.)

It is still doubtful whether the assignment by a husband of his wife's immediate choses in action is a reduction into possession, as it appears from various cases that an assign- ment should be considered a reduction into possession, ex- cept in the case of bills of exchange or promissory notes, on which the assignee suits in his own name. In the case of the husband's choses in action are not entitled to the property unreduced into possession, against the sur- viving wife. (Jarman, Settlements, 'Precedents," vol. ix.)

According to Blackstone (iii. 13), 'actual occupation of land without any right in bare possession, but such actual posses- sion is prima factae evidence of a legal title in the possessor, and it may in time become a perfect title.' This is properly the right of possession, that right which presupposes the condition of legal possession. Blackstone's 'right of possession,' which he speaks of in the same chapter, is the owner's right to possess, when he does not actually possess. The singular confusion of this chapter, and particularly of the third section, in which the author treats of the 'more difficult and obscure subject of the right of possession,' is hardly ground on the antecedent condition of a lawful possession only, or, as it is sometimes called, a bare possession. In like manner as to land, a bare possessor can maintain an action of trespass against a wrong possessor.

POST OBIT BOND (Post Obitum, Lat.), a bond given for the purpose of securing a sum of money, the condition of which is, that the money shall be paid on the death of some person.

POST-OFFICE.—History. Correspondence is the off- spring of advanced civilization. When the state of society in this country anterior to the seventeenth century is con- sidered, there cannot be doubted that the post accident of a post-office before that period. Few of the motives to written communication could be said to exist. Each dis- trict of the country supplied its own wants. The little foreign trade which flourished was conducted between the English buyer and the foreign seller in person, at the port where the import was made. Literature and science dwelt only in the convent or the cell. There was little absence from the domestic hearth, excepting that of the fighting man following the service of his lord; but neither the serf nor his master had the power, even if they had the will, to write letters. The business of the state only demanded cor- respondence. The king summoned his barons from all quarters of the kingdom by light despatches and frequent communication with his sheriffs, to collect his parlia- ment together, to muster his forces, to preserve his peace, to fill his treasury. The expenses of the establishment of the post were defrayed in the manner of every other large item in the charges of the royal household. As early as the reign of King John, the payments to Nuncii for the carriage of letters may be found enrolled on the Close and Mise-Rolls, and these payments may be traced in an edict by Edward the Third, and in the charter of the English Regius of Hasting redempti ad eundum dominium suum cum litteris Regis, pro expensis suis sic reeducendo—"xit.

As correspondence grew, it is easy to see that economical
arrangements for its transmission would grow likewise. The Nuncio of the time of King John was probably obliged to provide his own horse throughout his journey; whilst in the reign of Edward II. he was able, and found it more suited, to hire horses at fixed rates or stations. In 1481, Edward IV., during the Scottish war, is stated by Gale to have established at certain posts, 20 miles apart, a change of horses, who handed letters to another, and by this means expedited them 900 miles in two days. It would seem that the posts, at which relays of riders and horses were kept, were wholly private enterprises; but that when their importance became felt and appreciated, the state took the service and made it a profitable and a secure source to them to its surveillance. Before any substantive evidence appears the superintendence of the posts by the government, the superscription often met with, of ' haste post haste,' or ' message to the king,' at the close of the sixteenth century, is sufficient to show that the posts had become the customary channel for transmitting letters in the speediest way. A statute in 1548 (2 and 3 Ed. VI. c. 2) fixed a penny a mile as the rate to be chargeable for the hire of post-horses. In 1531, one Thomas Randolph is mentioned by Camden as the chief postmaster of England; and there are reasons for concluding that his duties were to superintend the posts, and to take the most effective and suitable connection with them. The earliest record of the duties and privileges of a postmaster seems to have been made by James I. The letters patent of Charles I. in 1632 (Publ. 8 Car. I., p. 1, m 15 d, Rodera, vol. 19, p. 390) contain a confirmation of the said patent, and called the said postmaster of England for foreign parts being out of his dominions. This functionary was to have ' the sole taking up, sending, and conveying of all packets and letters concerning his service, or business to be dispatched into foreign parts, with power to grant moderate salaries;' the office was granted to Mathew le Quester, and Mathew le Quester his son: all others were publicly prohibited that they should not, directly or indirectly exercise or intrude themselves: the said M. le Quester made and substituted William Frizell and Thomas Witheringus his deputies, and his Majesty accepted the substitution. The king, 'affecting the welfare of his people, and taking into his princely consideration how much it imports his state and this realm that the secrets thereof be not disclosed to forreigne nations, which cannot be prevented if a promiscuous use of transmitting or taking up of foreigne letters and packets should be suffered,' forbids all others from exercising that which 'to the office of such postmaster pertaineth, at their utmost peril.' In 1635 a proclamation was made ' for settling of the letter post in England and Scotland.' It asserts forth that 'there had been no certain or constant intercourse between the kingdoms of England and Scotland;' and commands Thomas Witheringus, Esq., his Majesty's postmaster of Edinburgh, to send his post or packet to run night and day between Edinburgh and Scotland and the City of London, to go thither and come back in six days,' Directions are given for the management of the correspondence between post-towns on the line of road and other towns which are named, and likewise in Ireland. All postmasters are commanded 'to have ready in their stables one or two horses': 2d. for a single horse and 5d. for two horses per mile were the charges settled for this service. A monopoly was established, with exceptions in favour of common known carriers and particular messengers sent on purpose, most of which have been preserved in all subsequent regulations of the Post-office. In 1640 a proclamation was made concerning the service of the office of postmaster for foreign parts, and also of the letter-office of England, into the hands of Philip Burlamachy of London, merchant; but in 1642 it was resolved by a committee of the House of Commons that 'no such service was a grievous and illegal, and ought to be taken off,' and that Mr. Witheringus ought to be restored. As late as 1644 it appears that the postmaster's duties were not connected directly with the work of the parliamentary papers. An entry on the Journals of the Commons states that ' the business of Commons, finding by experience that it was necessary, for keeping of good intelligence between the parliament and their forces, that post stages should be erected in several parts of the kingdom, and that the post-chaises run by the bearers of letters and couriers being at present void, ordain that Edmund Prideaux, Esq., a member of the House of Commons, shall be, and is hereby constituted, master of the posta, messengers, and couriers.' He first established a weekly conveyance of letters into all parts of the nation, thereby saving the money of the post stage, and charged 'mainly the amount of 7000l. per annum.' (Blackstone.) An attempt of the Common Council of London to set up a separate Post-office, in 1649, was checked by a resolution of the House of Commons, which declared 'that the office of postmaster, and ought to be, in the sole power and disposal of parliament.' But the most complete step in the establishment of a Post-office was taken in 1656, when an act was passed to 'set up the post-office at Scotland, and Ireland. This having been the model of all subsequent measures, induces us to give something more than a passing notice of it. The preamble sets forth 'that the erecting of one General Post-office for England and Ireland, and a separate post office to and from all places within England, Scotland, and Ireland, and into several parts beyond the seas, hath been and is the best means not only to maintain a certain and constant intercourse of trade and commerce between all the said places, to the great benefit of the people of those nations, but also to convey the publick despatches, and to discover and prevent many dangerous and wicked designs which have been and are daily contriv'd against the peace of the United Kingdom.' It provides 'that post-stage letters cannot be well communicated but by letter of escript.' It also enacted that 'there shall be one General Post-office, and one officer styled the postmaster-general of England and Ireland, who shall be the supreme comptroller of the whole trade of the post-office, and the keeper of the hores of all "through" posts and persons riding in post. Prices for letters, both English, Scotch, Irish, and foreign, and for post-horses, were fixed. All other persons were forbidden to set up or employ any foot-post, hоrr, or pasquet-boats.' These arrangements were confirmed in the first year of the Restoration by an act which was repealed 9 Anne, c. 11. In 1683, a metropolitan penny-post was set up, the history of which is length in the Ninth Report of the Commissioners of Post Office in 1811. From 1711 to 1838, upwards of 150 acts affecting the regulations of the Post-office were passed. In the first year of Her present Majesty ninety nine of these were repealed, either wholly or partially, and the following acts were passed, by which the whole department of the Post-office was regulated:—

For the management of the Post-office, c. 33.

The regulation of the duties of postage, c. 34.

For regulating the sending and receiving of letters and packets by the post free from the duty of postage, c. 35.

For consolidating the laws relative to offices against the Post-office, and explaining certain terms and expressions, c. 49.

A mere enumeration of the titles of all the acts affecting the Post-office would occupy a considerable space. An account even of these four last-mentioned acts must be discontinue for the reader referred to the acts themselves. Their enactments have been carried to the greatest extent, by the adoption of Mr. Rowland Hill's plan of uniform postage, which we shall notice hereafter. This measure, which has placed the Post-office, at the time we are now writing, in a state of total transition, so that what is in practice to-day falls into disuse on the morrow, was carried into effect by an act passed in 1839, 2 and 3 Vic., cap. 52, which conferred temporary powers on the Lords of the Treasury to do so, and was subsequently confirmed by an act 3 and 4 Vic., c. 56, passed 10th August, 1840.

Rates of Postage.—The first establishment of a rate of postage for carrying letters occurs in 1635, in the proclamation already described. The rates were fixed as follows:—

Under 80 miles. 2d. single letter.

Between 80 and 140 miles. 2d. single letter.

Above 140 miles. 6d.

On the borders and in Scotland. 8.

'Two, three, four, or five letters in one packet, or more, to pay according to the bigness of the said packet.'

The rates, both inland and foreign, fixed by the ordinance of the Goodwood and Edinburgh, were then fully discontinue. Letters above two sheets were charged by weight. In most cases the rates vary but little from those fixed in the 12 Car. 1., the principal of which were as follows:—

Letter not exceeding the bigness of a sixpence, from any place not exceeding 80 miles, 2d; above 80 miles, 3d.

From London to Berwick, 3d.; to Dublin, 6d. Letters of two sheets were
A Table showing the Scale of Distances according to which the Postage of Great Britain was charged, with the Rates levied for those Distances, from the year 1710 to Dec. 5, 1846.

<table>
<thead>
<tr>
<th>SCALE OF DISTANCES</th>
<th>1710</th>
<th>1725</th>
<th>1745</th>
<th>1797</th>
<th>1801</th>
<th>1805</th>
<th>1812</th>
</tr>
</thead>
<tbody>
<tr>
<td>From any Post-office in England or Wales to any place not exceeding 15 miles from such office</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>For any distance above 15 miles, and not exceeding 20 miles</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Above 20 miles, and not exceeding 30 miles</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>— 30 — 60 miles</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>— 50 — 120 miles</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>— 80 — 120 miles</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>— 120 — 170 miles</td>
<td>4</td>
<td>5</td>
<td>5</td>
<td>6</td>
<td>6</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>— 170 — 230 miles</td>
<td>4</td>
<td>6</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>— 230 — 300 miles</td>
<td>4</td>
<td>6</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>— 300 — 400 miles</td>
<td>4</td>
<td>6</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>— 400 — 500 miles</td>
<td>4</td>
<td>6</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>And so on in proportion, the postage increasing progressively 1d. for a single letter for every like excess of distance of 100 miles.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

These rates were applied to general-post letters passing from one post-town to another post-town. The principle of the rating was Dublin charge according to the distance which the conveyance travelled, until the year 1839, when the direct distance only was charged. A single letter was interpreted to mean a single piece of paper, provided it did not exceed an ounce in weight. A second piece of paper, however small, or any inclosure, constituted a double letter. A single sheet above an ounce was charged with fourfold postage. After a fourfold charge, the additional charges advanced by weight.

In Scotland, letters, when conveyed by mail-coaches only, were subject to an additional halfpenny. Letters passing between Great Britain and Ireland were subject to the rates of postage charged in Great Britain, besides packet rates, and between Conway Bridge, or Milford rates.

Between 1814 and 1839, the rates in Ireland were as follows:—

<table>
<thead>
<tr>
<th>Distances in Irish Miles</th>
<th>Rates for Single Letters</th>
<th>Distances in Irish Miles</th>
<th>Rates for Single Letters</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>2d.</td>
<td>15</td>
<td>10</td>
</tr>
<tr>
<td>15</td>
<td>3</td>
<td>23</td>
<td>10</td>
</tr>
<tr>
<td>25</td>
<td>4</td>
<td>30</td>
<td>12</td>
</tr>
<tr>
<td>35</td>
<td>5</td>
<td>40</td>
<td>12</td>
</tr>
<tr>
<td>45</td>
<td>6</td>
<td>50</td>
<td>13</td>
</tr>
<tr>
<td>55</td>
<td>7</td>
<td>60</td>
<td>14</td>
</tr>
<tr>
<td>65</td>
<td>8</td>
<td>70</td>
<td>14</td>
</tr>
</tbody>
</table>

The Postmaster-general had authority to establish penny posts for letters not exceeding in weight four ounces, in, from, or to, any city, town, or place in the United Kingdom (other than London or Dublin), without any reference to the distance to which the letters are conveyed.

The principle which guided the department in establishing penny posts, was to select small towns and populous neighbourhoods, not situated in the direct lines of general-post conveyances, and desirous of obtaining that facility, wherever such penny post did not afford the means of evading the general post, and promised to yield a return that would pay for its maintenance. The rule was to consider whether the receipts on the first setting up of the post would pay about two-thirds of the charge. The Post-office took its chance of the remainder being made good. There is a penny post for Dublin, the limits of which the Postmaster-general has authority to alter.

The London Twopenny Post extended to all letters transmitted by the said post in the limits of a circle of three miles’ radius, the centre being the General Post-office in St. Martin’s-le-Grange, which limits the Postmaster-general had authority to alter. The London Threepenny Post extended to all letters transmitted by the said post beyond the circle of three miles’ radius, and within the limits of a circle of twelve miles’ radius, the centre being the General Post-office.

The Select Committee of the House of Commons in 1838 and 1839, which investigated Mr. Rowland Hill’s plan, reported the following to be the average rates of postage:—

| Average rates, Multiple Letters being included and counted as Single. |
|------------------------|-----------------|
| Packet and ship letters | 23:1562 nearly 23 |
| Ditto, ditto, and London 2d. and 2d. post letters | 9:7065 nearly 9 |
| Ditto, ditto, and country 1d. post letters | 8:0406 nearly 8 |
| Inland general-post letters only | 7:6074 nearly 8 |
| Ditto and London 2d. and 3d. post letters | 6:5602 nearly 6 |
| Ditto, and country 1d. post letters | 7:4698 nearly 8 |
| Average rates, Multiple Letters being excluded. | 7:7442 nearly 8 |
| Single inland general-post letters | 7:8202 nearly 8 |
| Ditto and London 2d. and 3d. post letters | 6:2166 nearly 6 |

Franking.—As early as a post-office was established, certain exemptions from the rates of postage were made. Parliamentary franking existed in 1664. An entry is registered on the Journals of the House of Commons on 19th October, 1664, ‘That Edward Roberts be sent for in custody of the serjeant-at-arms or his deputy to answer his abuse and breach of privilege in exacting money of the members of this House for post letters.’ In the present bill which granted the post-office revenue to Charles II, a clause provided that all the members of the House of Commons should have their letters free, which clause was left out by the lords, because no similar provision was made for the passing of their letters, but a compromise was made on the assurance that their letters should pass free.

In 1735 the House of Commons prosecuted some investigations into the subject, which appear on the Journals. Again, in 1764 (4 Geo. III.), a committee was appointed to inquire into the several frauds and abuses in relation to the sending or receiving of letters and parcels free from the duty of postage. Among various abuses proved to exist, it is related that ‘one man had in the course of five months counterfeited 1200 dozen of franks of members of parliament, and that a regular trade of buying and selling franks had been actually established with several persons in the country.’ Resolutions restricting and regulating the privilege were passed. From time to time the privilege was extended, until it was finally abolished, with a very few exceptions, on 16th January, 1840.

Seven millions of franks, out of sixty-three millions of general-post letters, including franks, were estimated in 1838 to pass through the Post-office annually. The relative quantities of these several documents are given in the Third Report of the Commons’ Committee, as follows:—
The privileged letters, therefore, reduced to the standard of single letters, amounted to about 30 per cent. of the whole number of letters transmitted by the general post.

The average weight of a single chargeable letter was about 3-tenths of an ounce; the average weight of a parliamentary frank was about 4-10ths of an ounce; that of an official frank was 1-376 oz., or nearly two ounces; and that of a copy of a public statute 3-1129 oz. Had they been liable to the then existing rates, they would have contributed in the following proportions to the revenue:

<table>
<thead>
<tr>
<th>Rate per Letter</th>
<th>Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parliamentary franks</td>
<td>4,813,448</td>
</tr>
<tr>
<td>Official franks</td>
<td>2,109,010</td>
</tr>
<tr>
<td>Statutes</td>
<td>77,542</td>
</tr>
</tbody>
</table>

**Totals:** 7,800,000 £1,295,724

Newspapers with a few exceptions pass free of postage. All franking is now altogether abolished.

**Revenue.**—The statistics of the Post-office revenue are far from complete. In the early period of the Post-office establishment, and before 1716, only a few scattered accounts can be collected. In 1833 the annual revenue was £56,000,000; in 1859 for 14,000,000 (Journals of the Commons). In 1863 it was £60,827,216. In 1874 the annual revenue yielded £60,000,000. In 1885 it produced £63,000,000. Parliament resumed the grant after 1888, though the king continued to receive the revenue. In 1711 the gross revenue was reckoned at £11,456. From 1716 to 1723 the average yearly net revenue was £75,400,000, and increased to £96,234,147 in 1837. The last return of the force of the establishment was made in 1835, and was as follows:

<table>
<thead>
<tr>
<th>Establishment, Cost of Management, &amp;c.</th>
</tr>
</thead>
<tbody>
<tr>
<td>The head of the Post-office is styled the Postmaster-General, under whose authority are placed all the Post-offices in the United Kingdom and the colonies. The office was jointly held by two persons until the last few years, and it is now one, and the holder relinquishes it with a change of ministry; but the postmaster-general has not a seat in the cabinet. The Commissioners of Post-office Inquiry (4th Report) recommended that the office should be abolished, and three permanent commissioners; and a bill passed the Commons, giving effect to the recommendation, but was withdrawn by the Lords. The last return of the force of the establishment was made in 1835, and was as follows:—</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1. Postmaster-General</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of persons employed in secretary’s office</td>
</tr>
<tr>
<td>Mail-coach office</td>
</tr>
<tr>
<td>Solicitor</td>
</tr>
<tr>
<td>Receiver-general</td>
</tr>
<tr>
<td>Accountant-general</td>
</tr>
<tr>
<td>Surveyors</td>
</tr>
<tr>
<td>Ship-letter office</td>
</tr>
<tr>
<td>Dead-letter office</td>
</tr>
<tr>
<td>Foreign office</td>
</tr>
<tr>
<td>Inland office</td>
</tr>
<tr>
<td>Inspectors of letter-carriers</td>
</tr>
<tr>
<td>Messengers</td>
</tr>
<tr>
<td>General-post letter-carriers</td>
</tr>
<tr>
<td>Mail guards</td>
</tr>
<tr>
<td>Sea-mail guards</td>
</tr>
<tr>
<td>Housekeeper, bagmen, watchmen, &amp;c.</td>
</tr>
<tr>
<td>Twopenny-post letter-carriers</td>
</tr>
</tbody>
</table>

**Total:** 1337 £298 97

**Expenses:** £26,234 17 10 £18,394 19 2 £7,535 6

**Purd. Paper.** No. 442 (1835).

In 1831 and 1832 the chief offices of London, Dublin, and Edinburgh were re-modelled by the duke of Richmond, then postmaster-general. The separate office of postmaster-general for Ireland was abolished, and the offices were made, which were estimated to reduce the expenses above 4700l. per annum. In London the saving was estimated at 4664l. per annum: a secretary at Dublin and at Edinburgh is chief executive officer for the respective countries. The metropolitan General Post-office was removed in 1829 from Lombard-street to St. Martin’s-le-Grande. It is the head-quarters of all post-office business. All accounts of the collection of the revenue and the expenditure are rendered there. The number of persons employed in London in the dispatch of general-post letters only in the evening is about 290. In adding, including newspapers, about 350. In the evening about 100 letter-carriers are employed on newspapers, the nightly average of which is about 50,000. On Saturdays the numbers often exceed 100,000. Constant addition is being made to the number of post-offices throughout the kingdom. At the present time the following, considering posts formerly called penny-posts, fifth-

**Great Britain.**

<table>
<thead>
<tr>
<th>Years ended 3 April</th>
<th>Gross Receipt</th>
<th>Charges of Collection</th>
<th>Net Receipt</th>
<th>Rate per cent. of Collection</th>
</tr>
</thead>
<tbody>
<tr>
<td>1758</td>
<td>222,075</td>
<td>148,345</td>
<td>73,730</td>
<td>66 15 11</td>
</tr>
<tr>
<td>1769</td>
<td>305,065</td>
<td>140,298</td>
<td>64,760</td>
<td>45 19 9</td>
</tr>
<tr>
<td>1779</td>
<td>402,918</td>
<td>265,070</td>
<td>137,848</td>
<td>65 8 0</td>
</tr>
<tr>
<td>1786</td>
<td>466,206</td>
<td>250,323</td>
<td>215,873</td>
<td>43 10 9</td>
</tr>
<tr>
<td>1789</td>
<td>1,027,731</td>
<td>724,387</td>
<td>303,344</td>
<td>32 1 4</td>
</tr>
<tr>
<td>1791</td>
<td>21,937,417</td>
<td>594,043</td>
<td>1,526,527</td>
<td>27 1 6</td>
</tr>
<tr>
<td>1837</td>
<td>2,206,736</td>
<td>609,220</td>
<td>1,511,516</td>
<td>27 1 2</td>
</tr>
</tbody>
</table>

**Scotland.**

<table>
<thead>
<tr>
<th>Years</th>
<th>Gross receipts</th>
<th>Charges of collection</th>
<th>Net income</th>
<th>Rate per cent. of collection</th>
</tr>
</thead>
<tbody>
<tr>
<td>1800</td>
<td>100,551 14 4 16,806 8 0 83,755 6 14 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1837</td>
<td>220,758 13 10 59,945 7 1 160,813 6 9 27</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Ireland.**

<table>
<thead>
<tr>
<th>Years</th>
<th>Gross receipts</th>
<th>Charges of collection</th>
<th>Returns</th>
<th>Rate per cent. of collection</th>
</tr>
</thead>
<tbody>
<tr>
<td>1838</td>
<td>2,402,269 669,940 123,331 1,669,788 27 4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1839</td>
<td>2,467,216 669,756 126,938 1,667,522 27 2 11</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The Select Committee on Postage, in 1838, instituted the following table for the Post-office revenue of the six years ending 5th January, 1838, and that of six years ending 5th January, 1821.
**Cost of Management for the United Kingdom.**

<table>
<thead>
<tr>
<th>Clause Posts, and Sub-offices as Post-offices, may be taken to be about the numbers.</th>
<th>Post-Offices.</th>
<th>Sub-Offices.</th>
<th>Penny-posts.</th>
<th>Total.</th>
</tr>
</thead>
<tbody>
<tr>
<td>England</td>
<td>650</td>
<td>190</td>
<td>1090</td>
<td>1930</td>
</tr>
<tr>
<td>Scotland</td>
<td>220</td>
<td>105</td>
<td>230</td>
<td>555</td>
</tr>
<tr>
<td>Ireland</td>
<td>330</td>
<td>100</td>
<td>200</td>
<td>635</td>
</tr>
</tbody>
</table>

Every post-office in the United Kingdom has direct communication respectively with the chief offices in London, Dublin, and Edinburgh.

The operations of the Post-office belonging to the dispatch of letters before the introduction of Mr. Hill's plan, but which are thereby subjected to some modification, consisted in—1, facing or placing one way all the addresses of the letters and stamping them, to show the date of their receipt; stamping being performed with a hand-stamp at the rate of 200 letters per minute; 2, sorting according to the different mail-routes; 3, examining and taxing the letters with the various charges; 4, re-sorting according to the different post-towns; 5, telling, that is, making out bills for the unpaid letters against the different deputy-postmasters.

The duty of the London General Post-office in the receipt of letters consists in unloading the mails and delivering the letters, that is to say—1, in opening the bags, of which there are 700, and in checking the deputy-postmasters' accounts for paid letters, one person examining a bag in one minute and a half; 2, sorting into districts; 3, telling, that is, making out bills against every letter-carrier; 4, delivering; the letter-carriers return by a certain time, and pay the money charged against them to the receiver-general.

The Commons' Committee, in 1838, prepared the following analysis of the cost of management for the United Kingdom.

<table>
<thead>
<tr>
<th>Salaries and Allowances.</th>
<th>£</th>
<th>s.</th>
<th>d.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salaries to the Postmaster-General, Officers, and Clerks in London, Edinburgh, and Dublin Offices, and Wages and Allowances to Letter-carriers, Messengers, &amp;c.</td>
<td>98,485</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Salaries and Allowances to Deputy-Postmasters and Agents in Great Britain, Ireland, and the Colonies</td>
<td>124,403</td>
<td>3</td>
<td>11</td>
</tr>
<tr>
<td>Salaries and Wages to Officers and Letter-carriers in the Twopenny Post-office</td>
<td>45,574</td>
<td>10</td>
<td>1</td>
</tr>
<tr>
<td>Allowances for Special Services and Travelling Charges</td>
<td>11,106</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>

**Conveyances of Mails, Transit Charges, and Payment for Ship Letters.**

| Riding-work and Expresses by the Deputy-Postmasters in Great Britain and Ireland | 102,619 | 12 | 10 |
| Mileage to Mail Coaches, Wages to Mail Guards, and other Mail Coach Expenses | 107,122 | 8 | 0 |
| Tolls paid on Mail Coaches | 33,863 | 1 | 5 |
| Riding-work and conveyance of Mails in Canada, Nova Scotia, and Jamaica | 17,081 | 17 | 10 |
| Riding-work of the Twopenny Post-office | 5,198 | 17 | 2 |
| Transit Postage through Foreign Countries | 11,718 | 15 | 4 |
| Ship-Letter Payments | 10,649 | 9 | 9 |
| Packet Service, Expenses, including Post-dues | 62,506 | 3 | 0 |
| Tradesmen's Bills, Building and Repairs | 11,326 | 19 | 8 |
| Rent of Offices, Tithes, and Taxes | 4,143 | 0 | 0 |
| Law Charges | 5,417 | 4 | 5 |
| Stationary, Printing, Advertising, and Postage | 1,717 | 7 | 1 |
| Supranommenance Allowances, and Allowances for Offices and Fees abolished | 20,538 | 10 | 3 |
| Other Payments | 1,787 | 12 | 5 |
| Parliamentary Grants [Net Annual Amount stated in Account of Revenue in Appendix to Report II. | 681,259 | 2 | 8 |
| p. 177, 9,6849.] | 681,259 | 2 | 8 |
| Menai Bridge, Conway Bridge, and Milford Road | 7,440 | 9 | 6 |

These accounts show that about four-fifths of the charges consist of the cost of distributing letters in the United Kingdom. Transit costs two-fifths, and the establishment two-fifths. The maintenance of the post between this country and the colonies and foreign countries, the inland post in certain colonies, and other charges, make up the remaining fifth. But these accounts are not altogether complete, because a part of those packets controlled by the Admiralty is included in the Navy Estimates, and cannot be separated. And as the penny stamp on newspapers was retained as a postage, about 185,000l. should be carried to the account of the Post-office receipts. These accounts are of course subject to change yearly. The employment of railway Postmasters in Colonies; see Returns of Expenditure, to Appendix to Second Report of Committees, p. 220.

<table>
<thead>
<tr>
<th>Foreign and Colonial Expenses and Superannuation Allowances.</th>
<th>£</th>
<th>s.</th>
<th>d.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost of Transit.</td>
<td>98,485</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Cost of Establishment.</td>
<td>119,024</td>
<td>17</td>
<td>11</td>
</tr>
<tr>
<td>Total.</td>
<td>217,509</td>
<td>19</td>
<td>3</td>
</tr>
</tbody>
</table>

1. Stated in Return of Expenditure, in Appendix, p. 220, as 10,982l. 7s. 19d.
2. Postage-money and freight by the packets; see Appendix to Report II., p. 220.
3. Expenses of the Foreign and Colonial Packets; see Appendix to Report II., p. 220.

P. C. No. 1160.
roads has added much, since the above analysis was made, to the mileage charges.

No accounts of the number of documents passing through the Post-office were kept until very lately. Founded upon a very careful examination of the best data, the numbers were estimated by the Commissioners' Committee, in 1836, to be as follows:—

Chargeable letters—
General Post, inclusive of foreign letters, and reckoning double and triple letters as single 
2d. and 3d. 75,000,000
Country penny-post letters 8,000,000

Frauds 
Newspapers 

77,500,000
7,000,000
4,400,000

129,000,000

A more detailed estimate, the result of very elaborate calculations, is appended to the Report of the Commissioners' Committee which is here subjoined—


Packet and ship letters 3,523,572 231 56 2,379,564
General Post inland letters abroad 46,378,800 92 224 1,789,191
Ditto, not exceeding 4d. 5,153,200 35 75,151
London local-post letters 11,837,892 23 266 114,753
Country penny-post letters 8,080,413 1 33,483

Total 74,925,836 7,697 2,374,923

Parliamentary franks 4,813,448
Official franks, for public purposes 2,109,010
Public statutes 77,542
Newspapers 44,500,000

Total of documents transmitted by post 126,423,836 2,374,923
Unappropriated 

Total revenue from letters, 1837

See Notes to Postage Report, pages 4 and 6.

The chargeable letters in the mails leaving London were found to weigh only 7 per cent. of the whole weight of those mails. The average weight of the chargeable letters was 2d. The weight carried by the thirty-two mails leaving London was only 2912 lbs. Deducting one-half as the weight of the franks and franked documents, the weight of all the chargeable letters was only 1456 lbs, being 224 lbs. less than the weight which a single mail is able to carry. The average weight of the thirty-two mails was found to be as follows:—

Average of 32 Mails. Pounds weight. Per centage.

Bags weighed 
Letters, including franked letters and documents 
Newspapers 

66
91
304

14
20
60

453

100

The management of the conveyance of the mails by sea and land is subject, of course, to those constant changes which arise out of the improvements daily taking place in the various modes of transit. Certain packets are exclusively controlled by the Admiralty, to whose charge they were removed in 1837; others still remain with the Post-office. The Parliamentary Returns and Reports of various Commissioners on the subject of the Packet-Service are numerous. The most important are—The Twenty-second Report of the Commissioners of Revenue Inquiry, part 6, printed 1836, and the Sixth Report of the Post-office Commissioners on the Packet Establishments, printed in 1836.

Contracts for the conveyance of the mail-bags to the Continent are made between the Post-office and the proprietors of certain steam-vessels. A contract has lately been entered into with Mr. Cunard at an expense of 60,000/ per annum to carry the mails twice a month for eight months and once a month for four months in first class steamships between Liverpool and British North America. The passage between Liverpool and Halifax has been performed in forty days. The Post-office moreover has power of sending a bag of letters in any private ship.

The inland correspondence is carried by railroads, by four, six, and twelve horse coaches, and by relays in Ireland, by single-horse carts, on horseback, and foot.

Number of miles travelled over in England and Scotland by the mail-coaches in the following years, was as follows:—

1834 5,911,000 1837 6,643,217
1835 5,931,218 1838 7,204,255
1836 5,935,278 1839 7,377,587
And a Parliamentary Return, printed 1836 (No. 364), presented the following account of the speed of the mail-coaches—


Miles. Miles. Miles.

Greatest speed travelled per hour — 10 — 10 — 10
Slowest 6 7 8
Average speed 83 84 84

Per mile. Per English. Per mile.

Average mileage for 4-horse mails 124 124 134
Ditto for 2-horse do. 11 12

Since this Return, in 1836, was made, the acceleration of the mails by the use of railroads has been nearly doubled, and more than half the coaches out of London have been succeeded by them. At the present time, upwards of a fourth of the whole correspondence of the United Kingdom is carried on the Birmingham Railroad. The mail between London and Edinburgh is now conveyed in thirty hours, partly by railway and partly by coach.

The present system of mail-coaches owes its origin to Mr. Palmer. In 1834, Mr. Palmer, who was manager of the Bath and Bristol theatres, laid a plan before Mr. Pitt, which was adopted by government, and in 1835 the system was proposed to the functionaries in the Post-office. The greatest improvement in the transmission of the correspondence of the country was effected by this plan. Mr. Palmer found the post, instead of being the quickest, nearly the slowest conveyance in the country; very considerably slower than the common stage coaches. The average rate of speed did not exceed three miles and a half per hour. Whilst coaches left London in the afternoon and reached Bath on the following morning, the post did not arrive till the second afternoon. Slowness was the only defect; it was also irregular, and very insecure. The robbery of the mails was very common. Mr. Palmer succeeded in perfecting the mail-service, and inserted in its system, the punctuality, the speed, and security of the post. At least 500 places obtained a daily delivery of letters, which before received them not oftener than three times in the week.

The result has been well sustained for twenty years about 150,000/. a year. In ten years after Mr. Palmer's plan had been in work, the net revenue increased to 406,000/: in twenty years it became 700,000/; and in thirty years it had reached a million and a half, from which sum it can hardly be said to have advanced to the present time. The reader will find both the history and progress of Mr. Palmer's plan, of the Post-office opposition, and the subsequent proceedings arising out of his claims, fully related in Parliamentary Papers, nearly published by order of the House of Commons in 1807, 1808, and 1813.

Mr. Rowland Hill's plan.—In 1838 a plan calculated not only to increase the utility of the Post-office in the promotion of all the objects of civilization, but to change the whole management of the institution, was brought forward by Mr. Rowland Hill, a gentleman wholly unconnected with the department. It was at first privately submitted to the government, and subsequently published in a pamphlet under the title of 'Post-office Reform—its Importance and Practicability.' In a short period three editions were issued. The main features of Mr. Hill's plan, which, perhaps, aside the merits of the suggestion of a uniform rate, is discussed with singular elaboration, accuracy, caution, and sound reasoning, proposed to effect—1. a great diminution in the rates of postage; 2. increased speed in the delivery of letters; and, 3. more frequent opportunities for their dispatch. He proposed that the rate of postage should be uniform, to be charged according to weight, and that the payment should be made in advance. The means of
doing so by stamps were not suggested in the first edition of the pamphlet, and Mr. Hill states that this idea did not originate with him. A uniform rate of a penny was to be charged for every letter not exceeding half an ounce in weight, with an additional penny for each additional ounce. Mr. Hill discovered the justice and propriety of a uniform rate in the fact that the cost attendant on the transmission of letters was not measured by the distance they were carried. He showed on indisputable data that the actual cost of conveying letters from London to Edinburgh, when divided amongst the several post-offices, would cover one penny for thirty-six letters. Independently of its fairness, the obvious advantages of simplicity and economical management were strongly in favour of a uniform rate.

The measure commanded the assent of the House of Commons in favour of a uniform rate. The petition presented to the House by Mr. Wallace excited a strong public sympathy in its favour, and especially with the commercial classes of the City of London. Mr. Wallace moved for a select committee to inquire into its merits on the 9th May, 1837; but the motion fell to the ground. On the 30th May, 1837, Lord Ashburton, upon presenting a petition from some of the most eminent merchants, bankers, men of science, and others in the metropolis, to the House of Lords, spoke strongly in favour of the plan. In the Debateation of the same year, 1839, 22nd March, near the government, the appointed to the select committee to inquire into and report upon the plan. A society of merchants was forthwith formed in the City of London to furnish evidence of the unsuitability of the present system of Post-Office management in answering the wants of the present times. The subject began to excite much interest throughout the country. In the session of 1839, 2nd December, the House of Commons was petitioned in favour of the plan. In 1839-40 were shown, of which number seventy-three emanated from town-councils, and nineteen from chambers of commerce. After sitting upwards of sixty-three days, and examining Mr. Robert Hill and eighty-three witnesses, besides the gentlemen of the departments of the Post-Office and the Excise and Stamps offices, the committee presented a most elaborate Report in favour of the whole plan, confirming by authentic and official data those which had been previously formed from very scanty and imperfect materials. The Committee summed up a very long Report as follows:

"The principal points which appear to your Committee to have been established in evidence are the following:—

1. The exceedingly slow advance, and occasionally retrograde movement, of the Post-office revenue during the period of the last twenty years. The fact of the charge of postage exceeding the amount of postage. The fact of postage being evaded most extensively by all classes of society, and of correspondence being suppressed, more especially among the middle and working classes of the people, and this in consequence, as all the witnesses, including many of those of the Post-office, think, of being materially by scale of taxation. The fact of very injurious effects resulting from this state of things to the commerce and industry of the country, and to the social habits and moral condition of the people. The fact, so far as conclusions can be drawn from very imperfect data, that whenever on former occasions large reductions in the rates have been made, those reductions have been followed in short periods of time by an extension of correspondence proportionate to the contraction of the rates.

2. And as matter of inference from fact, and of opinion, that the only remedies for the evils above stated are, a reduction of the rates, and the establishment of additional delivery-stations, and the appointment of agents for forwarding mails and diligences: Great Britain and Ireland, and a part of Hungary, are the only exceptions. In the United States and British North America there is at present (1840) no posting, at least in the sense in which the term is commonly understood: that is, there cannot have his conveyance conveyed in such a direction as he may wish, and hire fresh horses at convenient stages. He must engage an extra exclusive in some principal town, and make use of that conveyance while the conveyance is on duty, unless another large town should lie on the road. This is the mode of travelling known on the Continent by the name of 'etturino,' 'voutier,' or 'Lohnkutscher.' The want of the power of posting is not so inconvenient as"
might be supposed, for the number of private carriages is not large, and in districts where there is much travelling, communication is usually facilitated by steam-boats, railways, and stage-coaches.

In France the government conduct all posting, and an authorised book is published fixing the number of horses to be used according to the number of persons to be conveyed and the shape of the carriage. We must refer to this book, in which the regulations relating to the manner of travelling will be found. The charge for each horse is 15d. for a post of five English miles; there is an addition to this charge on entering large towns. The average rate of travel is not more than 3 miles an hour.

In Germany, posts were first established by the Count de Taxis at his own expense, for which he was rewarded in 1616 by the emperor Matthias, who conferred on him and his successors the office of postmaster-general. It is considered an honour for a German to be chosen by the emperor to convey letters and passengers throughout his dominions. This privilege is still retained by the descendants of Taxis in some of the small German states. The number of horses used is not at the discretion of the traveller, but, as in France, according to the quantity of persons and luggage to be conveyed and the shape of the carriage. The price is low, some of the government regulations are inconvenient, and the system is slow. (Murray's Handbook for North Germany, p. 183.)

In Holland the posting regulations introduced by the French still remain in force, and are nearly identical with those of France. A Dutch post of about 15 miles is more than an English day's journey, and is usually travelled with a pair of horses for about 3. 4d. English; this sum does not include tolls, which are extremely high in that country. (Murray's 

In Belgium posting is under nearly the same regulations as in France: the cost of a pair of horses is about 1s. an English mile, post boy included. In Switzerland posting is confined to certain routes near the frontier, and is only attempted by the post offices for the general establishment of post-horses. (Murray's Handbook for Switzerland.)

In Hungary posting is principally in the hands of government; the cost for a pair of horses a little exceeds 3 florins a post. Between Vienna and Pesth there is likewise an independent posting establishment, the speculations of peasants who drive their own horses, and called 'Bauern (or peasants') post.' It is one-third cheaper, and at least twice as expeditious as the government posting; but traveller's must find their own carriages, as post-caleches are not provided by the peasants. (Murray's Handbook for South Germany, and Paget's Hungary, l. 56.)

In Spain post-horses are provided by government on the main routes, and in certain sections by inn-keepers. Private carriages on account of the frequent robberies of travellers who have not an escort, or who travel in small companies.

In Russia a traveller must obtain a 'Padaroshna,' or order from the governor of the place on all the postmasters on his intended route, enjoining them to supply him with a specified number of horses. The charge made for this order is an annual subscription from the price paid for the horses. Posting costs from 4s. 6d. to 6s. English for four horses for twelve miles; the driver gets a trifle, a rouble (10d.) or half a rouble each for a stage. A traveller should furnish himself with a 'marche route.' There being no book of roads and posts, it is customary to apply to the clerks of the post-office before starting from Petersburg or Moscow, who, for a fee of 10 or 12 roubles, make out a list in Russian and Italian characters of all the posts on the line, with the distance between them. The low remuneration of postmasters by the emperor induces them continually to attempt extortion. The pace travelled is frequently very fast considering the nature of the country. (Buchanan, vol. ii.)

Posting is very generally established in England, but is now less used in consequence of the introduction of rail-ways. In frequent and populous districts, change of horses may commonly be procured at intervals of from eight to twelve miles, and in the most remote and thinly inha-bited at insns not more than from fifteen to twenty miles apart. The cost at which post-horses are bought is ordinarily greater than that of stage-coach horses; they are often enufised, and may be had very cheap for short distances for long stages; besides, one at least in each pair must be a saddle as well as a draught horse: the average price of each horse may be stated at 17l. The trade is wholly in the hands of private speculators. The rate of travelling with post-horses varies according to the cost of postages, the number and the number of horses employed; from eight to nine miles an hour may be stated as the average rate of a pair of horses under ordinary circumstances. The number of post-horses in England makes it hard to prescribe the discretion of the party hiring, which are controlled by no legal regulation whatsoever. The payment is estimated per mile for each pair of horses, without reference to the number of passengers conveyed in the same. The rate of hiring is the same as the first; the payment to the postmaster does not include the driver, who expects a gratuity of about three pence a mile. Four horses is the greatest number ever required for one carriage. Sixteen or eighteen pence per mile is the usual price for each pair of horses; and, when the payment of postboys and turnpikes is added, a journey will be found to cost about twenty-two pence a mile.

If a post-chaise or fly be required as well as post-horses, no additional charge is made. The price of posting is near uniform throughout England, but there is considerable variation in the degree of goodness of the horses and chaises provided. On much-frequented roads, the gentleman competitors for the trade, the accommodation is very superior to what is found at little-frequented insns, where an inferior description of post-horse is kept, which is often insufficiently fed because it is not frequently employed. One of the causes which account for the excess of price paid for posting in England above that on the Continent is the large amount of tax which is levied upon it. 1. A postmaster pays yearly 7s. 6d. for a licence: 2. For every chaise or four-wheeled carriage, 5s. 6d.; or, for each horse, 2s. 6d. in London, and 2s. 3d. annually. 3. Three pence a mile for each pair of horses. The last-mentioned duty is levied in the following manner:—An Excise officer delivers to the postmaster so many printed tickets, some for four horses, some for two, and some for one horse; the postmaster is required, when he sends out his horses, to fill in upon a ticket, on which is stated the number and his name, the date, and the number of miles which the horses are hired to travel; this ticket is left by the postboy at the first turnpike. The excise-officer periodically takes account of these tickets, which are returned to his office by the turnpike-keepers; he also compares them with the number issued to the postmaster, and if there is any discrepancy, an inquiry is made. The postmaster must produce the horses in the chaise, and the horse should have in hand, he is fined 1s. for every horse enumerated in the missing tickets. This method of collecting the duty is found preferable to the system of farming to individuals the duties accruing in different districts. Penalties are also inflicted in other respects in connexion with the preservation of stage-coach roads, and the appointment of turnpike-keepers.

The total produce of the post-horse duty for the year 1839 was 237,452£. 7s. 5d.; for 1840 it was 224,405£. 15s. 11d., showing a decrease of 13,046£. 11s. 6d.

The great superiority of English over foreign posting is a very strong evidence that the system of open competition in this trade is preferable to a government monopoly and control. The establishment of posting by governments is a great evil from the point of view that it would not be generally undertaken by individuals; it has since been carried on by such governments principally for the purpose of raising revenue. We do not believe that good posting can be provided by governments; we are sure that under such circumstances it cannot be as good as public competition would secure. Where posting is a government monopoly, a minimum speed must be fixed for the protection of the public; this speed is usually uniform throughout the kingdom. The low rate of speed of such country than can be attained where circumstances are disadvantageous. It is the interest of the postmaster, who provides the horses, that this speed should not be exceeded, and the position of the horse, which has but two remedies; one, to complain to the authorities, which can only be done when the regulation pace is not attained; the other, to bribe the postilion. The latter system has become of such frequent use in most European countries, that bribes are, as it were, a customary payment.
they are always expected by the postilion, and are of little service unless they exceed the customary rate of bribing. We think that the monopoly system does not render posting more general, but that an individual system, in every district where it is now provided by governments, there is a sufficient demand to induce individuals to establish relays of horses on all important lines of communication. Under the free system practiced by the Irish, there has not been a monopoly; that there is neither a rich resident population nor generally such other circumstances as attract travellers from other countries; there is reason to suppose that there is a greater demand for posting in Ireland than on the continent of Europe generally. In the success of the voluntary system, in Hungary, where circumstances must be considered far from favourable to its introduction, we have additional evidence that it might be substituted beneficently and without risk in most if not all the instances where government monopoly retains. That revenue can be raised on posting, without the government acting as a postmaster, we have England for an example. There appears then to be no just ground for stating a monopoly which ensures a bad commodity without returning an adequate benefit.

POSTLETHWAYT, MALACHI, an eminent writer on commerce, is supposed to have been born about the year 1707; but no particulars relative to his origin or education, and the time of his death, are known. The introductory discourse to his work, entitled 'Great Britain's True System,' he says, pp. 62, 63, 'Nature having given me but a very tender and weak constitution, I have studied to be useful, and avoided, as much as I well could, every degree of the public life, as being inconsistent with and indeed destructive of that small share of health which I have several years enjoyed; and it will easily be believed that the studies I have been engaged in have not made it. I therefore considered in what capacity I might prove useful to society; and accordingly betook myself to the studious life, experiencing that to be more consonant to my preservation than that of the active and public one.' In the preface to the previous paragraph he complains of the neglect with which his labours had been rewarded. 'Had the writer of these papers,' he observes, 'given no public or private testimony of his turn to studies that have proved useful to the state, it might be unreasonable that they should have been justly thought presumptuous, in such an one to expect to make terms for his future intended services; but as the case is otherwise, he humbly hopes that some people will be candid and ingenuous enough to think that he has a right to be treated upon a footing something different from that of an upstart idle schemer or projector, who has never given proof of any talents that might deserve the public regard and attention.' This was published in 1737. The apparatus which it contains is very considerable, either by the government or the public. He died September 13, 1767, suddenly, as he had often wished, and was buried in Old-street churchyard, the coffin, at his request, being filled with unslaked lime.

Other works are:—1. 'Considerations on the Revival of the Royal British Assiento between His Catholic Majesty and the Hon. the S. Sea Company;' 8vo., Lond., 1749; 2. 'The Merchants' Public Counting-house;' 4to., Lond.; 1750; 3. 'The Universal Dictionary of Trade and Commerce, translated from the French of Savory, with additions;' 2 vols. fol., Lond., 1751-56, last edition 1774; 4. 'A short State of the Progress of the French Trade and Navigation;' 8vo., Lond., 1756; 5. 'Britain's Commercial Interest explained and improved;' 3 vols. 8vo., Lond., 1756; 6. 'The Importance of the African Expedition considered;' 8vo., Lond., 1758; 7. 'The History of the Public Revenue, from the Revolution in 1688, to Christmas, 1758,' fol., Lond., 1759. This last is by James Postlethwayt, probably the brother of Malachi, though it is attributed to the latter by Watt in his 'Bibliotheca Britannica.'

(An article on 'Political Arithmetic,' in Sir Egerton Brydges's 'Censura Literaria,' Lond., 1805, 8vo, vol. i. p. 59, &c.; 'Gentleman's Magazine,' vol. 37, p. 479.)

POSTULATE (postulatum, ætragna), a thing required to be granted, or the use of which in reasoning is demanded.

The term postulate is derived from the Latin postulare, to ask, demand, thus—that the latter is admitted to be self-evident; while the former may be agreed upon between two reasoners and admitted by both, but not as a proposition which it would be impossible to deny. We have [Axiom] given our reasons for supposing that Euclid made this distinction, and that several of those propositions which are now written among the axioms were originally postulates. The distinction above made is really necessary; for example, writers on the existence of Christianity assume the existence and attributes of the Creator as a postulate; they take them for granted. A person who is in the habit of not distinguishing these senses to which the words postulate and axiom have been affixed, might say they assume the existence and attributes above mentioned as axioms, by which another person might understand things necessarily indisputable; while the writers themselves only mean by the assumption, that what they take for granted has been previously proved by writers on natural theology. The confusion which prevails as to the use of the word axiom would be lessened by the introduction and proper use of the word postulate, which is our reason for adding these few words to what has been said under Axiom.
lateral teeth indistinct; ligament large, supported on prominent fuleras; muscular impressions two in each valve, subbicular. (Sowerby.)

This is the Perus subrividus of some authors, Galathena of Lamarrk, given by him to designate a genus of crustaceans, and Megadema of Bowdich, which last name Mr. G. B. Sowerby, jun., considers to have the right of priority. (Manual.)

Swainson adopts Bowdich's name, and places the genus under the subfamily Cyclinae, family Tellinidae.

POTAMOPHILUS, Latreille's name for a genus of crustaceans allied to Taphphus, if not identical with it. Indeed M. Desmarest thinks that Potamos and Potamosidae belong to the same family, from Taphphus.

POTASH. [Potassium.]

POTASSIUM, a metal, the base of the alkal potash, in which it exists combined with oxygen. It was discovered by Sir H. Davy in the year 1807. He obtained it by subjecting caustic potash (hydrate of potash), slightly moistened to increase the conducting power, to the opposite poles of a powerful voltaic battery: by the decomposing agency of the electricity, he found that the oxygen of both the water and the potash was elicted at the positive pole, while the hydrogen of the water and the potassium of the potash appeared at the negative pole.

This process yields however very small quantities of potassium gas, and Thénard shortly afterwards invented an apparatus by which a much more abundant supply was procured. For the details of this method we refer to the first volume of the 'Recherches Physico-Chimiques.' In this method the process consists in essentially in bringing fused hydrate of potash into contact with iron turnings, heated in a gun-barrel; at this high temperature the iron not only dissolves the water and combines with its oxygen, but it takes oxygen also from the potash, and the potassium set at liberty sublimes, and is collected in a cool part of the apparatus. Various improvements have since been made, and especially by M. Brunner and Wöhler, the former of whom procured the metal by heating potash with iron and charcoal, and the latter by means of charcoal alone: in this case the accompanying products are chiefly either carbonic acid or oxide of carbon, or a mixture of these gases.

The properties of potassium are the following:—in colour and lustre it strongly resembles mercury; it is solid at the usual temperature of the air; at 50° it is soft and malleable, and yields like wax to moderate pressure, and at 32° it becomes brittle; at 70° it is somewhat fluid, but not perfectly so, when the temperature reaches 150°; if heated to low redness, out of the contact of the air, it sublimes, and condenses on cooling, unchanged. Its texture when brittle is crystalline. Its specific gravity at 60° is 0.685; it is opaque, and of a dull and bluish aspect.

The most remarkable chemical property of potassium is its great affinity for oxygen, which at common temperatures exceeds that of any other body for this elementary substance. It is also highly efficient in fusing or melting, and the more rapidly as the air contains moisture, which it decomposes, and by combining with its oxygen becomes oxide of potassium, or potash.

On account indeed of its powerful affinity for oxygen, it must be kept either in small glass tubes hermetically sealed, or in a fluid, such as naphtha, which contains no oxygen; when heated in the air it takes fire, burns with a blue flame, the evolution of much heat, and is converted either into potash or peroxide of potassium, or a mixture of them. It takes the oxygen from any mixture of gases containing it, and indeed from almost every substance with which that element happens to be combined, so that when thrown upon water, it decomposes it with violent ignition, and the hydrogen of the decomposed water, combining with a little potassium, rapid combustion takes place, the principal products of it being water and oxide of potassium. When on the other hand, the potassium is put under an inverted tube containing water, no combustion takes place, if no air be admitted, and the results are hydrogen gas and potash.

All the elementary gaseous bodies unite with potassium, forming compounds of the greatest importance, and utility in many respects. We shall first describe the compounds of Oxygen and Potassium: these form two compounds, protoxide and peroxide of potassium; the first has been known and extensively used from time immemorial, and is the substance formerly called the vegetable alkali, or potash, or more correctly hydate of potash, and is now frequently called potassa; the peroxide has been known only since the discovery of potassium. Pure or anhydrous potash is obtained by the slow oxidation of potassium in dry air or dry oxygen gas; for if water be present, the hydrate is formed. Its properties are that it is white, solid, extremely soluble, and readily attracts moisture from the air; it fuses when heated, but bears a high temperature without being volatilized or decomposed. It combines readily with water, much heat being evolved during the combination, and its affinity for acids is extremely powerful; the aqueous solutions of it are the properties termed alkaline in a high degree, such as reddening vegetable yellow colours, and restoring the blue colour of vegetables which has been reddened by an acid; it is the basis of all the oxalates of potasso-magnesia, etc.

Potash, or protoxide of potassium, is composed of

| One equivalent of oxygen | 8 |
| One equivalent of potassium | 40 |
| Equivalent | 48 |

This substance exists in some minerals, but in the largest quantity in Telspar [Farspar], of which it constitutes on an average at 20° of centigrade, containing in the state of silicate or combined with silica. Potash, as it is well known, is extensively employed in the chemical arts and also in medicine, and for these purposes it is obtained by the incineration of wood, the ashes of which contain a considerable portion of this alkali. What is known in commerce by the name of potash is principally hydrate of potash, but mixed with some carbonate of potash and impurities; while the pearl ash of commerce is principally carbonate of potash; these are both very largely employed, and chiefly from North America.

Hydrate of Potash is formed whenever an aqueous solution of potash is evaporated to dryness. If, for example, we throw a piece of potassium into water, and examine after the combustion is over, it is found to contain potash; and if this solution be evaporated to dryness, the residue is not absolute potash, as was once supposed to be the case, but is a chemical compound of water and potash, from which no degree of heat is able to expel the water, but they may be volatilized in combination at a very high temperature. The usual method of obtaining hydrate of potash is to treat an aqueous solution of carbonate of potash (pearlash) with lime; this takes the carbonic acid, carbonate of lime is formed, and remains insoluble, while the potash dissolves, and the solution being evaporated, hydrate of potash, frequently called merely potash, is left.

The hydrate of potash is white, hard, and brittle, extremely caustic, very deliquescent, and very soluble both in water and in alcohol; by evaporating the aqueous solution, crystals are obtained containing much water. Its taste is very acrid, and on exposure to the air, moisture to the extent of 18 per cent. is lost, and the more rapidly as the air contains moisture, which it decomposes, and by combining with its oxygen becomes oxide of potassium, or potash.

Hydrate of potash is composed of—

| One equivalent of water | 9 |
| One equivalent of potash | 48 |
| Equivalent | 57 |

Protoxide of Potassium may be obtained by burning the metal in a current of dry hydrogen gas. It yields the same results, which is the peroxide in question. It is also procured when oxygen gas is passed over red-hot potash, and in small quantity when the hydrate is heated to redness in the air. This substance is not applied to any purpose whatever, and when mixed with the peroxide, is employed to form into oxygen gas, which escapes in small bubbles, and protoxide of potassium, or potash, which remains in solution: on account of this extreme facility of decomposition, it does not combine with any acids to form salts.
Peroxide of potassium consists of—

Three equivalents of oxygen . 24
One equivalent of potassium . 40

Equivalent 64

Acids and Potassia do not combine.

Hydrogen and Potassium form two compounds, but the composition of neither of them is known. When hydride of potassium is decomposed by iron at a white heat, a gaseous hydriet of potassium is procured, which burns spontaneously in oxygen gas or the air which contains it; the same compound is probably also produced when water is decomposed by the action of potassium upon it. When this gas is allowed to remain over mercury, the greater part and probably the whole of the potassium is deposited in a few hours.

When potassium is heated in hydrogen gas, a solid grey hydriere of potassium is formed, which does not burn spontaneously like the gaseous compound in oxygen gas, but is readily decomposed by heat or the addition of water.

Chlorine and Potassium unite to form only one compound; its present name is chloride of potassium, but it was formerly called the ferrigre salt of Sylvius, and afterwards muriate of potash. It may be obtained in several ways: when the metal is put into the gas, spontaneous combustion ensues, and a white inodorous compound is obtained, which has a taste greatly resembling that of common salt; when also potassium is heated in hydrochloric-acid gas, hydrogen gas is evolved, and the chloride of the metal formed; and lastly, when potassium is dissolved in a solution of hydrochloric acid, and the solution evaporated, the sublimate of this salt is formed, which are colourless, inodorous, saline, and rather bitter to the taste; it is soluble in about three times its weight of water at 60°, and more so in hot water; in alcohol it is insoluble. It was formerly employed in medicine, but is not at present; it is sometimes produced in chemical operations as a residue, and is then used in alum-making. It yields by analysis—

One equivalent of chlorine . 36
One equivalent of potassium . 40

Equivalent 76

Fluorine and Potassium combine to form the fluoride. This salt is procured by mixing the aqueous solutions of hydrofluoric acid and potash; by their mutual decomposition a solution of fluoride of potassium results, which, when the solution is properly evaporated, yields cubic crystals; they are colourless, deliquescent, have a sharp saline taste, and dissolve readily in water.

This salt is composed of—

One equivalent of fluoride . 18
One equivalent of potassium . 40

Equivalent 58

Bromine and Potassium combine by direct action, or by the action of the bromine upon a solution of potash; in this last method a mixture of bromide of potassium and bromate of potassium is procured, which, by evaporation to dryness, and subjecting it to a red heat, is totally converted into bromide. It is most commonly prepared by first forming a bromide of iron, and decomposing that salt with potash. These yield by double decomposition the bromide in question, which remains in solution, and hydrate of iron, which is precipitated.

By evaporating the solution, cubic crystals of bromide of potassium are procured; which are colourless and inodorous, have a very pungent and saline taste, are very soluble in water, and most so when it is hot. By heat this salt suffers igneous fusion, but is not decomposed. It is decomposed by chlorine, which evolves bromine; this salt is sometimes employed in medicine, and is constituted of—

One equivalent of bromine . 78
One equivalent of potassium . 40

Equivalent 118

Carbon and Potassium have been supposed to combine, but it is questionable, as no such compound has not, at any rate, been procured as a pure state.

Sulphur and Potassium probably combine to form five different compounds; the union takes place readily when these elements are heated together, and the nature of the compounds depends upon the relative quantities of the ingredients employed.

We shall describe only the protosulphuret, or that consisting of—

One equivalent of sulphur . 16
One equivalent of potassium . 40

Equivalent 56

This may be obtained by decomposing sulphate of potash at a red heat by hydrogen or carbonic gas. Its properties are that it has a red colour, has a disagreeable alkaline and sulphurous taste, is alkaline to test-papers, deliquesces on exposure to the air, and is soluble both in water and in alcohol.

Most acids decompose it, and during their action much hydrosulphuric acid gas is evolved; it is also decomposed when added to solutions of the different metals in acids, the colour of the precipitated sulphuret depending upon the nature of the metal.

This sulphuret, mixed with some sulphate of potash, is occasionally used in medicine in cutaneous disorders.

Phosphorus and Potassium and Selenium and Potassium form compounds, but they are of not importance.

Iodine and Potassium may be more to combine, so as to form the iodide of the metal, by dissolving the iodine in a solution of the alkali; but the residue obtained by evaporation requires heating to convert the iodate of potash, which is also formed, into the free iodide of potassium. This is usually procured by decomposing a solution of iodide of iron by means of potash; the solution separated from the precipitated hydrate of iron is colourless, and by evaporation yields cololess and cubic metallic crystals. This salt is composed, that it has a penetrating taste; it is very soluble in water, but absolute alcohol dissolves it sparingly; at a red heat it fuses, and at a very high temperature it is volatilised without suffering decomposition.

It is used in medicine to a very considerable extent, and is composed of—

One equivalent of iodine . 126
One equivalent of potassium . 40

Equivalent 166

Cyanoget and Potassium combine. When carbonate of potash is heated, with twice its weight of dried blood or other animal matter, to redness, and the residue, when cold, is washed with water, a mixture of carbonate of potash and cyanide of potassium is dissolved, which, when precipitated with acetate of lime, filtered, and mixed with alcohol, yields a precipitate, which is cyanide of potassium.

This salt is very soluble in water, and when once procured in the solid state, it should be kept from the contact of air and water. It may be fused by heat without decomposing; its taste is pungent and alkaline, accompanied with a flavour of hydrocyanic acid, and the smell of this acid is perceptible when it is exposed to the air, the carbonic acid of which causes its expulsion; by the action of acids it is resolved into hydrocyanic acid, which is expelled, and potash, which unites with the acid. It is sometimes employed in the preparation of hydrocyanic acid.

It is composed of—

One equivalent of cyanogen . 26
One equivalent of potassium . 40

Equivalent 66

Cyanoget of Potassium combines with iron to form a well-known and extensively employed salt, the Ferrocyanide of Potassium, sometimes called Prussiate of Potash, or the Triple Prussiate of Potash. This salt is obtained by indirect chemical action. When animal matter, as hoofs or horns or blood, is heated in an iron vessel with potash, a compound is obtained, which consists principally of cyanogen, iron, and potassium. This is very soluble in water, and the solution by evaporation yields large crystals of a fine yellow colour, and the primary form appears to be a cube. This salt is inodorous; its taste is rather saline; water at 60°, and alcohol about one-third, at 122°, its own weight of this salt; it is insoluble in alcohol; when moderately heated it loses about 13 per cent. of water, and becomes colourless. When heated to redness with access of air, it suffers decomposition; but on exposure to the water leaves oxide of iron, and cyanide of potassium is formed; and this is the best method of obtaining this salt.

When the heat is long continued, the salt is entirely decomposed, ammonia is formed and evolved, and a mixture of carbonate of potash and peroxide of iron remains.

When this salt is added to a solution of a persalt of iron,
that beautiful pigment Prussian blue is formed, and it pre-

cipitates most metals from their solutions in acids. This
salt is also used in the manufacture of the metallic
acid, which it readily yields when heated in a retort with
sulphuric acid.

It is composed of—

One equivalent of cyanide of iron 54
Two equivalents of cyanide of potas-
sium 132
Three equivalents of water 27
Equivalent 213

SAlts of Oxide of Potassium, or Oxialis of Po-
tassium.

Potash Salts.—Potash has powerful affinity for most
acids; the salts which they form are never prepared, as
many metallic salts are, from the direct action of the acid
and metal, but seldom indeed from the immediate com-
bination of the alkaline oxide, or potash, with acids. Some
of the most important salts are found native, and others are
very commonly the result of chemical operations performed
with the intention of preparing other products at the same
time.

The first salt of potash which we shall mention is one of
the highest importance: it is the

Nitraxe of Potash, Nitre, or Sulphate.—It is quite true that
this salt may be artificially formed by adding either the
acid or oxide of potash, to dilute hydrochloric acid; but it is
never so obtained, being in some countries formed by the putrefa-
c tion of animal matters, in others it is a natural product, and
to a very great extent, and as such is largely imported from
the East Indies under the name of rough nitre, where it is
obtained by the lixiviation of certain sands; in Germany
and France it is artificially produced in what are termed nitre-
beds. M. Thénard has given a detailed account of the
French process, in his "Traité de Chimie."

The properties of nitraxe of potash are, that it is colour-
less, inodorous, has a cooling sharp saline taste, and is readily
soluble both in cold and in hot water; from the latter prismatic
crystals separate on cooling, the primary form of which is a
colourless rhombohedral prism, but are usually hex-
sided prisms, with dихedral summits; when obtained from
a large quantity of solution, the crystals are of very con-
siderable size. The crystals contain no combined water, but
it is commonly mechanically lodged between their laminae.
At about 61° of Fahr. nitre fuses, and at a high tempera-
ture it suffers decomposition; and the residue, according to
the degree or continuation of the heat, is either hyponitrite
of potash, or a mixture of potash and peroxide of nitrogen.
Potash nitraxe is much less soluble during its rapid
solution in water, so that an ounce of it is capable of reduc-
ing five times its weight of water fifteen degrees. Nitre
possesses powerful antiseptic properties. It is largely em-
ployed in the manufacture of gunpowder and of nitric acid,
and also in numerous processes in the chemical arts and
manufactures.

It consists of—

One equivalent of nitric acid . 64
One equivalent of potash . 48
Equivalent . 102

Chlorate of Potash.—This salt is entirely an artificial one.
It is prepared by passing chlorine gas into a solution of
potash; during their mutual action there are formed chlo-
rate of potash and chloride of potassium; and the chlorate,
being the less soluble of the two, crystallizes first. This
salt is colourless, inodorous, and has a cooling acute taste.
The primary form of the crystal is an oblique rhombo-
hepic prism. The crystal contains no water. It is soluble in
eighteen parts of cold and two and a half parts of boiling
water. When triturated, it appears phosphorescent; and if
heated to redness, it fuses, gives out nearly its per cent. of
very pure oxygen gas, derived both from the decomposition
of the acid and the potash, and mere chloride of potassium
remains. When triturated with certain inflammable bodies,
as sulphur and phosphorus, combustion or explosion,
the latter, both are produced; these effects are produced by the oxygen
of the decomposed chloric acid.

This salt is also decomposed by sulphuric acid, giving out
oxide of chlorine. [CARBONATE.] In 1788 an attempt was
made in France to use this salt, instead of nitrate of potash,
in the manufacture of gunpowder; but when the mixture
was triturated, so violent an explosion occurred as to kill
several people.

It is constituted of—

One equivalent of chloride acid . 76
One equivalent of potash . 48

Equivalent . 124

Chlorate of potash is employed in chemical investigations
on account of the purity of the oxygen gas which it yields;
it is also employed in the manufacture of matches which
are fired by means of friction. When this salt is mixed with
sugar, metallic arsenie, or antimony, a drop of sul-
phuric acid will set the whole in rapid combustion.

Carbonate of Potash.—This salt is known in its impure
state by the name of pearlash; it is rendered pure by se-
duction, and on evaporation to dryness, it becomes a salt
which does not readily crystallize.

Pearlash, as already mentioned, is procured by the inci-
neration of wood: when treated with a small quantity of
water, but little except the pure carbonate of potash is dis-
solved. The solution, when evaporated till it becomes
a granular solid, has the following properties:—it is colour-
less and inodorous, its taste is strong and disagreeable, it does
not readily crystallize, and is never kept in crystals; it is
deliquescent, attracting in a short time enough water from
the atmosphere to become fluid; water dissolves rather more
than equal weight of this salt; it is insoluble in alcohol;
alcohol of this is soluble in water, and this in carbonic
acid. The aqueous solution has the alkaline property of turning
vegetable air to carbonate of lime, is brown, and hence it was
formerly called subcarbonate of potash; but it is in fact
a neutral carbonate, consisting of—

One equivalent of carbonate acid . 22
One equivalent of potash . 48
Equivalent . 70

But, as usually prepared, it is a sesquihydrate, and contains
about 16 per cent. of water, which it loses by exposure to
a red heat; it becomes amorphous. This may be artifi-
cially prepared by passing carbonic acid gas into a solution of
potash, or by dehydrating a mixture of charcoal and
nitre: in this case the charcoal is converted into carbonic
acid at the expense of the oxygen of the decompdosed nitric
acid.

This salt is largely employed in the arts, and also in
medicine; it is decomposed by most acids, with effervescene-
ce of carbonic acid gas: it is also decomposed by lime and
by barytes, which separate its carbonic acid, but without effer-
vescence: no degree of heat is sufficient to expel its carbonic
acid.

Bicarbonate of Potash. When carbonic acid gas is
passed into a solution of carbonate of potash, the salt com-
bines with an equivalent of carbonic acid, and becomes a
bicarbonate. This salt is inodorous, colourless, and crystal-
line; has scarcely any alkaline taste, and acts feebly upon
turmeric paper; the primary form is a right oblique-angled
prism. It is not affected by evaporation, but it requires four
times its weight of cold water for solution, and by boil-
ing water it is partially decomposed, with the evolution of
carbonic acid gas: in alcohol it is insoluble. When exposed
to a red heat, it loses half its carbonic acid, and reverts to
the state of a neutral carbonate.

Bicarbonate of potash consists of—

Two equivalents of carbonic acid . 44
One equivalent of potash . 48
One equivalent of water . 9

Equivalent . 101

It is largely employed in medicine and in chemical in-
vestigations.

Sulphate of Potash is an artificial salt: it is seldom pre-
bred by the direct combination of its constituents, but is
readily obtained by the addition of the acid either to potash
or the carbonate of potassium, in the precipitation of sul-
phuric acid and also of nitric acid by adding sulphuric acid
to nitrate of potash: by dissolving the residue in water, and
saturating the solution with potash, the sulphate is obtained,
which precipitates as a yellow, colloidal powder; its taste is
inodorous, bitter, and rather hard; water at 60° dissolves only
one-sixteenth of its weight, but boiling water a much larger
quantity; it is insoluble in alcohol, and suffers no change
by exposure to the air; when subjected to a red heat, it de-
crepitates, loses but little weight, for it contains no water
of crystallization. The primary form of the crystal is a
right rhombic prism, but it has often the appearance of a dodecahedron, consisting of two six-sided pyramids applied base to base. It yields by analysis—

| Equivalent of sulphuric acid | 40 |
| Equivalent of potash | 48 |

Equivalent | 88

It is now little employed in medicine; but it is used in the manufacture of alum, and as a residue is often decomposed and converted into carbonate of potash.

Bisulphate of Potash is produced during the course of the processes employed for obtaining nitric acid from nitre, as when two equivalents of the acid are used with one equivalent of the salt: the properties of this salt are, that it is colourless and inodorous, but extremely sour and bitter; it is very soluble in water, the solution renders vegetable blues very strongly, and decomposes carbonates with effervescence. When exposed to a red heat, it loses all the water of crystallization and half the acid, and becomes neutral sulphate of potash.

The primary form of the crystal is a right rhombic prism, which is frequently very flat.

It contains—

| Two equivalents of sulphuric acid | 80 |
| One equivalent of potash | 48 |
| Two equivalents of water | 18 |

Equivalent | 146

This salt sometimes crystallizes with only one equivalent of water, and it is then in fine filamentous crystals.

It is a little, and but little, employed in medicine; the rough salt is employed in some chemical manufactures under the name of sal ammoniac.

Sesquisulphate of Potash has been occasionally formed; it is in fine slender crystals.

There are two salts of potash, consisting of the alkali combined with vegetable acids, which it will be proper to mention, and with which we shall close this account of the salts of potash, presuming that there are several other important compounds for an account of which we must refer to chemical authorities.

Bisulphate of Potash, Cream of Tartar, or Tartar.—This salt is obtained by the purification of argl. A potash, which is the name of the impure salt deposited from wine. Bitartrate of potash is colourless, rather hard, inodorous, and has a sour taste; when dissolved in water it reddens litmus paper; it requires sixty parts of cold and fifteen parts of boiling water for solution; by long exposure to the air the dissolved salt is decomposed and converted into carbonate of potash, and the same effect is immediately produced by a red heat. The residue, put into water, leaves charcoal, and the carbonate of potash is dissolved.

The primary form of the crystal of this salt is a right rhombic prism.

It consists of—

| Two equivalents of tartaric acid | 132 |
| One equivalent of potash | 48 |
| One equivalent of water | 9 |

Equivalent | 189

It is very largely employed in the preparation of tartaric acid, in medicine, and some chemical arts. When an equivalent of potash is added to this salt, it becomes neutral tartaric acid; this salt is afterwards used in medicine, and being much more soluble in water than the bitartrate, was formerly called soluble tartar.

Oxalic Acid forms three different compounds with potash, the oxalate, quadrooxalate, and bisnoxoalate; this last is a natural product obtained from sorrel, and is commonly known by the name of salt of sorrel. It is a colourless crystalline salt, has a sour bitterish taste, and is soluble in about ten parts of water.

It consists of—

| Two equivalents of oxalic acid | 72 |
| One equivalent of potash | 48 |

Equivalent | 120

General properties of the Salts of Potash.—These are stated by Mr. Brande to be nearly as follows:—They are soluble in water, and afford no precipitates with the alkaIis or their carbonates. They produce a precipitate in the solution of chloride of platinum. They are not changed by ferrocyanide of potassium or hydrosulphuric acid. Added to sulphate of alumina, they occasion it to crystallize, the crystals being common alum: a strong solution of tartaric acid added to it occasion no precipitation on the point of neutralization is exceeded; but then a crystalline precipitate of bitartrate of potash is formed, on account of the slight solubility of this salt, which redissolves when excess of potash is added to it. The tartaric acid also occasions precipitation in solutions of the neutral salt of potash, as the nitrate, sulphate, and chlorate.

POTASSIUM, or POTASSA. Medical Properties of.

The preparations of potash which are used in medicine are very numerous; but they may be reduced and spoken of under a very few heads:—first, those which are employed from their causticity to produce counter-irritation, or to open abscesses; these are hydrate of potash (potassa fusa) and the oxide which is obtained by heating the carbonate; they are also used to counteract acidity, viz. liquor potassae, carbonate and bicarbonate of potash, the causticity of which last two is diminished in proportion to the increase of the carbonic acid combined with the alkali. Thirdly, those which possess a purgative property, such as the sulphate and bisulphate of potash, the tartarate and bitartrate. Fourthly, those possessed of a diuretic property, such as the acetate, and, when in small doses, the carbonate and chlorate of potash.

These, there are the sulphate of potash, the bismuth of potash, and iodide of potassium, which possess special and characteristic qualities, which prevent their being classed with any of the other preparations.

The various uses of these numerous preparations are susceptible can only be explained in medical treatises: all that is proper here is to caution individuals against the employment of those which counteract acidity. These are extensively habituated to, either in a simple state, or as ingredients in effervescing mixtures, for the cooling effect they produce, or designedly to remove superfluous acid in the stomach. Where much debility exists, and more particularly if the phlegm is disposed to deposit the phosphates from the urine, be present, a single dose of such articles may do much injury, and their frequent or prolonged use creates a worse condition than that which they were intended to remedy. An intelligent medical attendant can alone decide on their propriety. 'If I were required,' says Dr. Prout, 'to name the medicine calculated to do the most mischief, I should name the common saline draught formed of potash and soda, and some vegetable acid.' (Treatise on Diseases of the Urinary Organs, 2nd edition, p. 145.)

Carbolic Acid.

The property assigned to bismuth of potassium, of removing enlargements of the spleen, is by no means clearly proved. The use of iodide of potassium, Iodine, is noticed under Iodine, and those of the sulphate of potassium are treated of under Sulphur. In case of poisoning by liquor potassae or the carbonates, vegetable acids or oils should be administered.

Potato (Solanum tuberosum, Lin.). The circumstances which led to the introduction of this valuable vegetable into the system of British husbandry may be thus succinctly stated.

Queen Elizabeth, in 1584, granted a patent for discovering and planting new countries not possessed by Christians; and under this sanction some ships, principally equipped by Sir Walter Raleigh, sailed with him to America. Thomas Harriot (a citizen known as a man of��nical), who accompanied the adventurous squadron, transmitted to England the description of a plant called Openack by the natives of that part of North America, which the courtier-like gallantry of Raleigh had named Virginia.

Harriot described the solution of potash caused by ground, and 'hanging together as if fixed on ropes, and good for food, either boiled or roasted.' Gerard, in his 'Herbal,' a few years subsequently, distinguished the plant by a plate; and not only gave a correct representation of it, but the assertion that it was an indigenous production of Virginia, whence he himself had obtained it, but supplied some curious details of its qualities, and of the various modes in which it may be dressed for the table. He suggests the recommendation of 'delicate conserves and restorative sweetmeats,' with the assurance that its flatulent effects may be infallibly corrected by having the roots 'eaten sopped in wine,' adding, 'to give them the greater grace in eating, that they should be boiled with prunes.'

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The honour of first cultivating the potato in Ireland, where it has so long constituted the principal food of the peasantry, has been attributed to the grandfather of Sir Robert Southall—Dr. John Southall, of St. Saviour, London, towards the close of the seventeenth century. Sir Robert's statement was to the effect that his ancestor had obtained some roots from Sir Walter Raleigh. The well-known story of Raleigh's having sent the potato to the Irish is now at Youghal in Co. Cork, and of the disappointment of the gardener in autumn on tasting the apples of the "fine American fruit," and of his subsequent discovery of the tubers, when he was desired by his master to throw out "the useless weeds," is probably authentically true.

But the potato had been known in Spain and Portugal at an earlier period, and it is from the latter country that we most directly derive the name by which we know it: this is from the word patata, which we usually call the potato in Spain, although we call it Irish potato, because the national elegy in praise of the potato, or the "potato song," has but one stanza like the original from which it was taken; and out of this 2 stanza number he has given us the perfect rhyme of the potato song.

In order to obtain seed, properly so called, the apple, when perfectly ripe, should be dried, and then disengaged from its seed by rubbing with the hand. The seed should be preserved in a dry place, in paper or cloth bags, until the middle of March or beginning of April, when it may be sown in wooden boxes or earthen pans, with a covering of less than half an inch of well pulverised earth. The vessels containing the seeds should be kept in boxes of mild heat, such as is suited to the raising of half-hardy annuals. The plants, when an inch high, should be pricked out into other vessels, and placed in a temperature somewhat lower than before. The tubers, which are the surfaces of the earth, should be exposed after frosts have ceased. These plants should be put out in drills sixteen inches apart, with the interval of six inches between the plants in the rows. They will produce tubers in the first year, and these may be planted in for next year, in the third summer.

For very early crops, such as those which the ash-leaved and walnut-leaved kinds in particular yield, the most successful treatment was that practised by the late Mr. Knight, president of the London Horticultural Society, in the course of whose practice we give the following details of instruction:—Drills may be formed in a warm and sheltered situation (and in the direction of north and south) during any of the winter months, two feet apart, and seven or eight inches deep. The drills are prepared, and the earth is then drawn into the drills and combined with the earth four inches downwards, and covered with some of the mould, which had been thrown out in forming the drills, by the rake, to within four or five inches of the surface. The earth is then beated down with the crown eye uppermost, in the centre of the furrow, four inches from each other, and to be covered with only an inch of mould at first, and afterwards with an occasional quantity of earth, until the land is finally hardened by methods advanced as to require the usual earthing, of which however very little is necessary. Mr. Knight used leaves as a lining at the sides of the drills in the early periods, to preserve as much warmth as possible, and better to guard against the effects of frost.

This management alone will be found successful, except perhaps in very tenacious clay soil, in which the rains of winter may lodge so near the fibres of the plants as to de- stroy them altogether; but destruction from this cause may easily be avoided by increasing the original depth of the furrows and loosening the bed of clay below with the spade to such a depth as will allow the water to descend from the surface, with a drain to carry it off altogether; or by laying below some absorbent matter, such as ashes, chalk, or calcareous gravel.

The germination of the sets may be accelerated by a little manure previously to their being planted, by laying them in a box or in the ground, in warm ashes, and then covering them with finely-sifted mould. If this be done in December or early in January, the sets, with strong shoots, may be taken up in February (with as much earth as possible adhering to them), and carefully placed in the drills, after the furrows are formed. The plants are then covered with well-rotted leaves or earth in the same way.

To market-gardeners it is a great object to raise the earliest potatoes, considering the high price which they obtain for them, though in their usual state they are neither wholesome nor palatable. Next in early maturity is the ash-leaved and walnut-leaved, the early Manly and early Champion and Fox's seedling.

The best soil for potatoes generally is that which is altogether fresh from the state of ley, or which has not long been broken up: land which has been in grass for only two or three years is easily prepared for the principal crop. It should be as deeply ploughed, and as early in the surface broken, and handled as possible. After lying in this state for two or three weeks, it should again be well harrowed, and then deeply ploughed twist, without bringing up any bad substratum, and it will then be fit for the crop. The composting of the land compared with the crop, is a very essential; the proportion of manure with the crop, weighs more heavily, with the quality and the comparative season on which it is raised, and the tendency of the crop to the correctness of succeeding operations. The dung is then to be at the bottom, covered by the cart with a drag-fork as his horse and cart move forwards (the horse walking in the centre of three drums while the wheels move in the other two), in such quantities as can best be determined from the experience of the labourers.
employed to spread it. In dry weather the carting does no injury, and this method is universal in Scotland.

The other principal mode, more generally pursued in Ireland by some of the best cultivators of the potato, is to cart out the manure before the drying, and then to lay the potatoes two or three inches deep, and so arrange the manure may be laid over the set—which cannot be done, in the former case—and this will preserve them from being displaced or crushed by the feet of the horses during the process of covering the set. By this method, the advantage which is not inconsiderable—there is the inconvenience of calculating with precision and laying aside as the plough advances to draw the last drills—where the rows had stood— the precise complement of manure, and the difficulty to the ploughman of preserving the exact breadth in those drills.

Some avoid any perplexities in those respects by ploughing in the manure thoroughly before drilling, and either dropping the set in every third furrow, or rolling the whole manured and ploughed surface, and then making drills. Our own experience is greatly in favour of this latter mode, when the fertilising matter is abundant and of the short description which freely combines with the soil and does not obstruct the plough in the subsequent drilling. The lazy-bed method does not consist of it here would be superfluous, yet undrained bog-land, or under any circumstances in which a redundancy of water is probable in the autumn, as on low marshy lands, or stiff clay, in which the water of the rain, or from the soil, would be likely to be saturated with moisture in winter from want of drainage, the lazy-bed system is by far the safest. The deep wide furrows at each side carry off the water, or at least remove it from the potato. Thousands of tons of potatoes in the last year (1839) were utterly lost in Ireland, being drilled in flat and tenacious lands, which would have escaped destruction from the continued rains of that season if drained by the furrow of the lazy-bed. Some disadvantages in the advantage of deep ploughing, the lazy-bed practice repeated for three years will completely spade-trench the entire land, and thus effect an important benefit not otherwise attainable by the humble tiller of the soil who has no team for ploughing it effectually. Thus local or national modes, though apparently defective to the superficial observer, are sometimes founded upon sound principles, and though we feel disposed to exclude the minute details of what is only an adaption under peculiar circumstances for the potato culture under our modern system, we protest against the unqualified condemnation of a method which is still pursued throughout nearly one half of Ireland.

(Provisions to be yet assigned) are next to be laid down, either under or over the manure, at the average distance of sixteen inches, by the settlers, who move in a retrograde direction, and are provided with aprons to contain the sets. A sufficient number of men is in attendance to divide the manure evenly in the drills; the plough also is in the field in order that there may be the least possible exposure of the manure and sets to the sun or to parching wind, but the plough should cover the sets rather lurchy than clay soil.

The roller is next used to lay an even surface to the braining* plants and to facilitate the subsequent progress of the paring plough, which is to be set to work when the stems are seven or eight inches high; and such a system is practised on the plantations as is practicable without injuring their tender fibres. The weeder should then hoe the plants carefully, and immediately afterwards (for the influence of wind or hot air on the roots is pernicious) the scuffle or drill-harrow is set in, and in order to produce the finest results, before the earthing plough, with either double or single mould-board, is introduced to apply fresh earth to the stems.

Such is the method of earthing universally pursued by the farmers here, and if our present condition in England is considered, the hand-hoe is principally used for destroying weeds, loosening the earth, and moulding the plants; for the two first of these operations the bean-hoe (which cuts about six inches deep) is used, and the turnip-hoe for drawing the earth to the plants. In potatoes the soil is low, and the effect is only to the soil of half an acre per day, and the subsequent earth-

ing of the same quantity is also executed by one man. This is far cheaper than horse-work, and it does no injury to any of the stems, and makes no waste land at the headrigs; and where the earth has been perfectly well prepared at the commencement, this manual husbandry is the best.

If this system be found most effectual in England, where the wages of a labourer are 2s. a day, it must be far more so in Ireland, where they are but half that amount, and where the production would soon give sufficient dexterity in the use of the hoe.

To the distance between the drills, due regard must be had to the natural quality of the soil and the quantity of manure available, or otherwise to the probable luxuriance of foliage. Mr. Knight, aware of the necessity of allowing room in proportion to the vigour and height of the plants, has laid down an exact rule thus:—"the height of the stems being three feet, the rows ought to be four feet apart; but for a general average, thirty inches is the best distance. As to excess of foliage, we are certain that it is not desirable, for the produce of tubers is not always in proportion to the degree of foliage; under high and rank stems there is often a very scanty crop, and Mr. Knight is justified by experience in his observation that "the largest produce will be obtained from varieties of rather early habits and rather low stature, there being in very tall plants much time lost in conveying the nutrient to the tubers, which are wasted on an elevated and upright stems, which do not fall down and shade the others, are those which are desirable." Two more earthings are usually given; it is questionless that be necessary in soil of a good depth, unless there be a very wide interval between the drills, and it is certain that much earthing in dry and shallow soil is injurious; for by withdrawing the earth from contiguity to the fibres which ramify and penetrate far in loose soil, and laying it on the head of the drill, and in the high ridge form, it is applied where it is useless for the nourishment of the tubers, and in a position that prevents the rapid escape of moisture, which in such soil it ought to be as far as possible prevented. In some climates, particularly if it be of tenacious quality, the furrows at each side of the drill will be in general seasons most serviceable as drains, as well as for furnishing earth to support the stems, while the moisture will be sufficiently retained for the roots.

Experiments* have led to the inference that in soil of a loose porous quality there is probably a greater produce by affording any (or a very slight) moulding, but by digging instead, between, and for depth the growth of potatoes. If next to an adequate allowance of rich manure, is the main cause of a large produce. In proportion to the deficiency of manure will be the necessity for opening the soil beneath, in order to allow the fibres of the tubers to penetrate to the depth incredible to those who have not followed their ruminations, to extract all the nourishment which the subsoil may afford. If there be abundance of nutriment above, neither the necessity nor perhaps the inclination for penetrating deeply can exist, and in such cases the operation of earthing by the plough, as long as it can be introduced without injury to the stems, may be useful in many ways, but unquestionably by guarding them from the effects of storm in exposed, and from excessive wetness in low situations. Besides, in regulating this point, regard should always be had to the quality of the potato, for the tubers of some varieties have a tendency to push to the surface, while others tend into the earth, and therefore require a different treatment.

But in all cases the earth should be rendered as loose and friable as possible, by spade, hoe, or plough, and where labour is easily commanded, the spade will be found to be the more efficacious implement in the first course of treatment after a long time.

Some plant one or two sets in the centre of every square yard, but in such cases great and continued earthing, until each square presents the form of a pyramid, is contemplated; and if our present condition in England is considered, the hand-hoe is the only applicable to deep and retentive soils. Great returns have no doubt been thus obtained, but by this mode there is the least possible incorporation of the manure with the soil.

In minute husbandry, such as that carried on in Devonshire, the plough altogether,

* See Martin Doyle's "Cyclopedia of Practical Husbandry," page 387.
† That also called the bean-hoe, shaped like an adze.

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the ordinary and best practice is to lay the sets in rows, after a very deep winter digging, marked with a garden-line. The workman digs precisely as in a garden-plot for cabbages: he clears a little drill, lays the sets straight, puts a sufficiency of soil around them, covers them from frost, which he digs with a spade or a three-pronged fork flattened at the ends, levelling and pulverising as he advances to the distance at which he again puts down his line and forms a new drill. Thus the scrawny, half-burned, the stalks perfectly covered, and every facility given for the hand-hoeing in due course.

The next stage of the potato is that in which it blossoms. It has been recommended to pluck off the flower at every second entrance of the insects; but experience has generally proved that the extra cost is hardly defrayed by the additional produce obtained. If the flowers are plucked off, they should be nipped in the early bud. When the flower is fully open, which is indicated by the withering of the stalks, and when the land is free from stones, labourers, in the proportion of about twenty to one plough (half of these being usually men, and the remainder women or young persons), should be ready to pull up the stalks, and carefully collect the tubers which may be attached to them, before the plough proceeds in its operation. When it is prepared for work, the men, with prongs flattened at the extremity, are placed at such distances from each other as will allow them to clip the petioles cleanly, for the pickers, who are also stationed at exact distances with a basket between every pair, into which they gather the potatoes.

The crop is raised in three ways: First, in taking off a slice from each side of every plough, and leaving it to the workmen to open out the centre with their prongs; or in its third movement it may turn up this centre, under which the main body of the tubers lies, which is more expeditiously and easily done if the earth be in fit condition. Second, a double mould-board plough with a long lank, and divested of its coulter, may be drawn by two strong horses through the centre of the drills, and complete the work of the tubers left by the pickers, by which means the work-people will be kept exceedingly busy; and if the land be in good fribale order, this is the most expeditious mode, and provided there is a perfect draining afterwards, the crop will be taken out with sufficient cleanliness. Third, the crop may be taken up by prongs or long narrow spades without the plough. In wet weather this more tedious but far safer method is frequently adopted, and if the drills be short and the headlands ungraduated, it is the most desirable, as well as the most economical. In removing the produce in this manner, it is obvious that the number of gatherers should be much less in proportion to the men, than under the other circumstances; and it should provide that the first part of the field cleared, to make a free space for the ploughs in the bouthings and for the carts. One horse will answer for three carts if the distance of draught to the pits be short, by changing him alternately from an empty to a full cart, but this only applies to the Scotch and Irish system of draught by single carts and horses. The general mode of securing the crop in pits in the field is the safest. In making the pits—improperly so termed, for the base is only sunk a few inches, and the potatoes are raised considerably in the heaps—the only caution to be observed is that furrows should be cut on all sides to prevent water from lodging or penetrating inwards, and the earth thrown up by the divide towards the edges not more than of four or five inches, should be well beaten with spade or shovel to exclude moisture and frost. The potato-stalks, however apparently dry, should never be laid between the potatoes and the earth in these accumulations, for they soon ferment and rot, and injure all the potatoes that come in contact with them. Straw is at least useless. The length of the pit depends on circumstances, but the breadth should not exceed four feet, as large accumulations are most liable to fermentation.

The only decided disease of the potato, besides the dry rot, is 'the curl,' which is an imperfect formation, and was first generally observed in 1764, when it gave rise to various conjectures and unprofitable discussions: the cause is, in some measure, this habit of the potato; that is, a crop of which any part is intended for seed, all the plants affected with curl should be carefully separated before the general removal commences. The dry rot, or decay of the set, which during recent years so fearfully prevailed in many parts of the United Kingdom, is also still unexplained as to its real cause, though the press has teemed with essays and very remarkable 'consequences respectful of the seed.' That growers are often reminded of this is by the 'Philosophical Transactions of the Bath Society,' and we have reason to think, in seasons similar to those which we have experienced in latter years. The set, though apparently sound and whose shape is coherent and curl, has often in the ground where placed in contact with hot dung (which is utterly absurd, for when in the ground no injurious fermentation can arise); very hot weather, great drought, hot sun, cold parching wind, dry and heating manure, sea-water, exhaustion from a long course of culture, contradicted by many instances in which it appears that the produce of the same variety—for instance the apple—has been successfully cultivated during sixty-five years without any failure; or the loss of vitality from prematurely shooting.

If potatoes have fermented in their accumulated state, they would bear obvious evidence of it and therefore be rejected. Fermentation cannot be detected even to a common farmer, nor does the failure probably proceed from insects in the eyes, as has been suggested, for if so, it is difficult to account for the fact that sets from the same heap planted at one part of the day have totally failed, while those planted at another are pushed forth healthy shoots. As to decay in the land from the contiguity of fermenting manure, 'how is it to be proved that the gases evolved by fermenting manure can injure the sets?' Fermenting manures would stimulate the decomposition of their warmth, and excite their growth by the aliment which their essential qualities, carbon and ammonia, supply to plants. Why not the gaseous exhalations from rank and fermenting hot-beds destroy the tender plants which are supposed to be used in them? (D'oyly's 'Cyclopedia of Practical Husbandry.)

The same causes which are severally assigned for the total or partial failure of the potato in numberless instances, and to a most distressing extent in Ireland, have existed since the culture of the potato commenced, but without the effects deplored, which have only prevailed within a very recent space of time. But from the frequent and searching investigation of the subject by the most competent and practical men, a prevention against the failure has been ascertained, namely, the planting of entire tubers. When the cut sets have failed, the entire tubers have resisted premature decay; whereas it arises from atmospheric influence or the liability of the soil, and as soon as the first part of the field is cleared, to make a free space for the ploughs in the bouthings and for the carts. One horse will answer for three carts if the distance of draught to the pits be short, by changing him alternately from an empty to a full cart, but this only applies to the Scotch and Irish system of draught by single carts and horses. The general mode of securing the crop in pits in the field is the safest. In making the pits—improperly so termed, for the base is only sunk a few inches, and the potatoes are raised considerably in the heaps—the only caution to be observed is that furrows should be cut on all sides to prevent water from lodging or penetrating inwards, and the earth thrown up by the divide towards the edges not more than of four or five inches, should be well beaten with spade or shovel to exclude moisture and frost. The potato-stalks, however apparently dry, should never be laid between the potatoes and the earth in these accumulations, for they soon ferment and rot, and injure all the potatoes that come in contact with them. Straw is at least useless. The length of the pit depends on circumstances, but the breadth should not exceed four feet, as large accumulations are most liable to fermentation.

The only decided disease of the potato, besides the dry rot, is 'the curl,' which is an imperfect formation, and was first generally observed in 1764, when it gave rise to various conjectures and unprofitable discussions: the cause is, in some measure, this habit of the potato; that is, a crop of which any part is intended for seed, all the plants affected with curl should be carefully separated before the general removal commences. The dry rot, or decay of the
great presence of mind: the empress conceived a real esteem for him, which survived the loss of her affection. Unlike her other favourites, Potemkin, when no longer her personal favourite, continued to be the confidential minister and in the first rank of her retinue for many years, the most influential man in Russia. His views were turned towards the south, and he encouraged Catharina to extend her dominions in the direction of Turkey. He was a main promoter of the war against the Porte in 1771-2, in which the Crimean and Kuban chieftains were dismembered from the Ottoman empire, and by which Russia acquired a footing on the coast of the Euxine. He was afterwards the means of inducing Herodotus, earl or prince of Georgia, to do homage to her, and he attended her a few times at Tiflis.

He also induced Solomon, the sultan of Imiretia, to do the same. Lastly, he took advantage of a dispute with the khan of the Crimean, who had been acknowledged as an independent prince, in order to reduce that line of the subjection of Russia, in the years 1784-5. The countries dismembered from the Ottoman empire were formed into a Russian government, which received the classical name of Tauris, or Taurida, and Catharina bestowed upon Potemkin, for his services, both military and diplomatic, the surname of Taurischeksky. Conformably to this name, the magnificent palace which Catharina had built for him at Petersburgh was styled the Taurian or Taurida palace. In 1787, war broke out between Potemkin and Ismael, sultan of the Ottoman empire. Potemkin was made commander-in-chief of the Russian armies, with several experienced generals under his orders, among whom was Suwarow. In 1788, Oczakov was taken by the Russians, and Ismael in the following year. The Russian fleet under the command of Grand-Admiral Potemkin, entered the Bosphorus, the whole of which was annexed by Russia, including the town of Jassy, formerly the capital of Bulgaria. In 1791, Potemkin left the army, and returned to Petersburgh to enjoy his triumphs. He gave a magnificent entertainment to the empress and her court in the Taurida palace, which is well described by Tooke and the other historians of Catharina. It was a gorgeous display, worthy of the Eastern fairy tales. The empress, contrary to her custom, stayed till midnight, in order not to disturb the pageant. 'I am very glad I did not retire,' she said, 'for I returned to Potemkin to express her satisfaction, when the prince fell on his knee, and seized her hand, which he beswore with tears. This was a burst of genuine feeling, and in a man who had long appeared a stranger to such emotions. Shortly after, Potemkin quitted Petersburgh to return to the army. He attended the congress of Jassy in 1792, but the negotiations had already begun, and were carried on between Prince Repnin and the grand-vizier. Potemkin was left to superintend the preparations of that time. When Catharina heard of it, she sent two of her first physicians to attend on him; but he would pay no attention to their advice, and indulged even more than usual in his intemperate manner of living. His disease gained ground from this time. He was at length sent to a town which he had built at the confluence of the Yekol with the Bog, but he had scarcely travelled ten miles when he felt himself dying. He was taken out of his carriage, and was conveyed in a sedan chair to the house of a poor peasant, where he expired in the arms of his niece the Princess Braniak, in October, 1792, at 52 years of age. His remains were moved to Kherson, where a mausoleum was raised to him by order of Catharina. The following is a list of his titles and offices at the time of his death: — he was field-marshal of Russia, chief general of the cavalry, great-admiral of the Euxine and Caspian seas, governor-general of Taurida and Ekatariinoslav, master of the ordnance, inspector-general of the artillery, bey and grand-bey of the Caucasus, adjutant-general and chamberlain to the empress, colonel of several regiments, and knight of many orders.

Potemkin was a man of contradictions and eccentricities; of great natural abilities, vast conceptions, and of extensive though not deep information. He had a most active mind, with an indolent habit of body. Enthusiastic in his youth, he lived to be satiated with every kind of excitement, and weary of all that this world can supply; at every hour he aspired to more power over the last his country and his sovereign with zeal, and he was the means of establishing the power of Russia on the coasts of the Euxine. His character was peculiarly Russian, and both his faults and his good qualities were exhibited magnified.

POTENTILLA (so called from its potency in medicine, some of the species, especially P. reptans, having been employed as astringents) is a large roseaceous genus, the species of which inhabit exclusively the cooler parts of the world, and prefer the coldest. Most of them are herbaceous perennials, a very few only forming shrubs. Their flowers are usually yellow, in a few species they are white, and very rarely even of a deep blue. They are distinguished on account of their ornamental appearance. As a genus Potentilla differs from Fragaria (or the strawberry) in noting except the receptacle of its fruit being dry and hard, instead of succulent and much enlarged. Such of the species of Potentilla as have fingered leaves are popularly called cinquefoils.

POTERIOCRINITES. [Encrinites, vol. ix., p. 391.]
N. B. In Mr. Murchison's great work on the Silurian System, fig. 120, vol. ii., p. 290, he figures and describes a new genus of Encrinites under the name of Hypanthurciories, observing that in it the lowest plates clearly seen appear to correspond to the first costals of the genus Actinocystites, and that the pelvic plates are probably small. The column he thinks was probably short; its joints are prominent in the middle, and thinnest near the body. The Professor observes, in conclusion, that the arrangement of the lower plates in Eucalyptocrinites of Goldfuss is so very similar to that above noticed, that it is difficult to suppose the genera so entirely distinct as would be the case if Eucalyptocrinites be really, as Goldfuss supposes, destitute of a column. Quere tamen.

POTHERY'S, 1795. [Pothier's, vol. ii., p. 174-52, 1795.]
In his book on Louisiana, entitled Du Poterio, or an introduction on the history of the Roman law, a Commentary on the laws of the Twelve Tables and on Hadrian's perpetual Edict, and is accompanied by notes and tables of contents. After Pothier's death, his friend Guyot published a new edition of his Pandects, in which he inserted many corrections and additions that Pothier had made in MS. on a copy of the former edition, and also a biographical notice of Pothier, 3 vols. fol., Lyon, 1812. Other editions of Pothier's Pandects have followed in a rage, with little merit. Pothier, it is true, has the reputation of being the first to mention the French translation by Bréfard Neuville and Moreau de Montalain, Paris, 1810.

Pothier was the author of numerous treatises on various branches of Law, such as the Codification of the Code Civil des Contrats Algatoires; 'Du Contrat de Vente'; 'Du Contrat de Change et Billets de Commerce'; 'Du Contrat de Louage'; 'Du Contrat de Louage Maritime et du Contrat de Socie&t'; 'Traité des Obligations,' which has been translated into English, with the following title: 'A Treatise on the Law of Obligations or Contracts, translated from the French by W. D. Evans,' 2 vols. 8vo., London, 1806; 'Traité du Domaine de Propriété, de la Possession, et de la Prescription.' These and other treatises of Pothier have been collected in one work under the title 'Traité sur Differentes Matières de Droit Civil appliquées à l'Usage du Barreau et de la Jurisprudence Française,' 4 vols. 4to., Orleans, 1806.

The compilers of the new French Civil Code under Napoleon made great use of Pothier's treatises, as is shown in a useful work by M. Ledru, a French civilian, entitled 'Le Pothier des Notaires, ou Abrégé de ses divers Traités, avec l'Indication de ceux des Auteurs Anciens et Modernes qui les ont retenus la Dispositions,' 4 vols. 8vo., Paris, 1823. On this subject Savigny remarks, 'It is generally known that Pothier is the polar star of Roman law to modern French jurisprudence, and is a most immediate influence on the code. I am very far from depreciating Pothier: on the contrary, the jurisprudence of a nation, in which he was one of many, would be very well directed. But a juridical literature, in which he stands alone, and is honoured and worshipped as an object of pity. (Vom Beruf, &c., p. 60.) The treatise on Contracts, which is perhaps the best known of Pothier's works to English lawyers, may be comprehended within the
same judgment. It is a respectable and useful work, but it should not be studied as an authority. Among the other works of Pothier is the 'Courtois d'Office,' 2 vols. 1769, which is one of the best treatises on the old French law.

Pothier died at Orleans in 1772. He left many works in MS. which were published by his friend Guyot: 'Œuvres Posthumes de R. J. Pothier,' 3 vols. 4to, Paris, 1777, containing 'Des Donations entre Vifs, Des Donations Testamentaires,' 'Des Donations entre Vifs,' 'Des Cens, Des Fees,' De la Procedur Civile et de la Procédure Criminelle.

POTIGUA, by Schumacher that his learning was enlightened by a strong sense of justice, morality, and religion. He never gave his sanction to any of the unjust and cruel practices of the old French judicature system, such as the torture. In his treatise 'De la Procédur Criminelle' he says: 'Art. 13: Third council of Tours, which existed in his time in France, and still exists in some European states, of obliging the accuser, at the beginning of his interrogation or examination, to take an oath to reveal all the truth, thus inducing him to perjure himself in order to save his life: 'a custom, observes Pothier, which has been reproved by many divines and moralists, and which appears to be borrowed from the code of the Inquisition.'

POTOMAC. [MARYLAND; VIRGINIA.]

POTOMIDA, Mr. Swainson's name for a subgenus of Dr. Turton's genus Myrca, placed by Mr. Swainson in the subfamily Uminera, family Uminidae. (Malacology.)

POTOSI, a town in South America, in the republic of Bolivia, and in the department of Potosi, is on the south-western declivity of the Cerro de Potosi, in 19° 36' S. and 65° 22' W., at an elevation of 13,020 feet above the level of the sea. This town, which a hundred years ago, when the mines of the Cerro were in a flourishing state, is said to have contained 100,000 inhabitants, has, in 1920, a population not exceeding 12,000, about half of whom were Peruvian Indians. It is built on an uneven site, and the streets are consequently irregular, but they are tolerably wide and clean. Many of the houses are large, and most of them substantial. On one side of the town, and in the shadow cast from many low range of buildings, including the courts of justice, the gaol, and the guard-house. Opposite to it is the cathedral, an immense edifice, still unfinished, which has very little claim to architectural beauty. The mint also is very large, but far from being a fine building. The great square contains a monument erected in honour of Bolivar. The town is well supplied with meat, fruits, and vegetables, though the surrounding country is barren and exhibits few signs of vegetation and very little watercourses. The climate of Potosi presents the changes of the four seasons of the year every day. It commonly freezes at night, and the morning is piercingly cold; the forenoon is a little warmer, but is cooled by the wind blowing from noon to midday. At two or three o'clock it is extremely hot in the sun, but in the shade it is not only cool, but very cold. The evenings and the early part of the nights are usually serene, and sometimes mild. It is a healthy place, but the extreme rarity of the air, in consequence of the great elevation above the sea-level, produces a difficulty of respiration called zanochi, to which even the natives and animals are subject.

The Cerro de Potosi rises to the elevation of 16,037 feet above the sea. It is of a reddish brown colour, and has the shape of a perfect cone, but is not volcanic, as has been supposed. It does not produce a blade of grass: the whole mountain seems to consist of silver-ore of different degrees of richness. It was discovered that this mountain contained silver-ore by an Indian, in 1545, who being in pursuit of a llama upon the steep declivity, in order to save himself from falling caught hold of a shrub, which being torn from the soil, exposed a mass of solid silver at the roots. From that time to the present day the mines have been worked. The production of these mines from 1556 to 1800 amounted to the enormous sum of 825,906,509 Spanish dollars, or 183,388,864L. The greatest produce was in 1650, when it amounted to 7,457,240 Spanish dollars, or 1,769,060L. About the seventeenth century the produce began to fall off. A few years previous to the War of Independence the produce was still about 8,000 mares (4000 pounds avoirdupois) of pure silver weekly, but during the war the extensive machinery was destroyed, and in 1826 Temple estimated the annual produce at 125,000L. only, or 1,000 mares weekly.

Humboldt, Essai sur la Nouvelle Espagne; Temple, Travels in various parts of Peru.

POTOSI, SAN LUIS DE. [MEXICAN STATES.]

POTSDAM is one of the two governments which form the province of Brandenburg. It is the seat of the capital, which, in diameter 12 miles, a little, has been called a government by Hassel and others. This government is situated between 51° 50' and 35° 35' N. lat. and between 11° 10' and 14° 24' E. long. It is bounded on the north and east by the Brandenburg-Prussian department, on the north-east by Pomerania, on the east by Frankfurt, on the north by Saxony, on the south-west by Anhalt-Dessau, on the west by the province of Saxony, and on the north-west by Holstein. Of its districts are: Prenzlau, which includes the Priezitz, the Uckermark, and several circles of the Middle Mark, and is divided into thirteen circles, besides the district of Berlin. The area is 8000 square miles, and the population (1867) 1,169,766; that of Berlin is 665,854. This tract is an extensive and low plain, varied only occasionally by slight elevations. The soil, though the most part a light sand, contains some fertile spots, especially on the banks of the rivers. The climate is generally healthy. The principal cities are: Babelsberg, now Babelsberg; and Potsdam, now Potsdam; both however, do not yield above 20 per cent. The inhabitants are industrious, and carry on manufactures of woolen, cotton, and linen. The principal towns, besides Berlin and Potsdam, are Brandenburg, with 13,289 inhabitants; Torgau, with 10,908 inhabitants; Tiefurt, with 9762 inhabitants; Ruppin, 7415 inhabitants; Wittstock, 6113 inhabitants; and Spandau, 6753 inhabitants.

Potsdam, the capital of the government, the headquarters of the imperial forces, which, afterwards seat to Berlin, is situated at the confluence of the Havel and the Havel, on an island about 18 miles in circumference, formed by the Havel, small lakes, and a canal. It became the occasional residence of Frederick II. in the eighteenth century, but it is indebted for its chief improvements to Frederick II., before whose time the old town consisted of only four streets. Frederick built almost the whole of the new town, and had several of the new streets made to look like the town of Innsbruck, and the freestone pavement of the streets are regular and broad, and there are some good squares; but the whole is on too large a scale for the population, and in the absence of the court, or when the garrison is reduced, the town is surrounded by a rampart, and has nine gates, of which the Brandenburg gate is a handsome triumphal arch copied from the arch of Trajan at Rome. Of the seven bridges over the Havel and the canal, the finest is the Teltow bridge, which is 757 feet long, with 8 iron arches resting on massive stone pillars. Of the numerous fine buildings the following seem to be the most worthy of notice: 1. The Royal Palace, in the old town, which the King of Saxony sought to appropriate to himself, but Frederick II. It is an oblong parallelogram, three stories high, adorned with colonnades of the Corinthian order. The main entrance is towards the old market-place, a handsome square, in the middle of which there is an obelisk of red and white marble 75 feet high, the four sides of which are adorned with busts of the elector Frederic William and of kings Frederic I. Frederic William I., and Frederic II. This palace has extensive gardens along the river. 2. The Town-hall, which Frederic II. caused to be built in 1734, on the model of that of Amsterdam. 3. The Theatre. 4. The new great poor-house and infirmary; and 5, the Military Orphan Asylum. Of the churches, we may notice the Garrison church, which contains the tombs of Frederic William I. and Frederic II.; the church of the Holy Ghost, with a fine steeple 260 feet high; and the French Protestant church, built on the plan of the Pantheon at Rome. There are extensive barracks, and a large building for the unemployed seamen 75 feet high, with a large battery of troops in bad weather. Potsdam is the seat of the government, and of all the offices connected with it, and has a great number of useful and charitable institutions. The principal manufactures are those of iron and ironware, carriage-hosiers, musical instruments, and carriages. In the manufactory of small arms, the musket-barrels, made at Spandau, are fitted with stocks, &c., and finished for use.

In the vicinity of Potsdam are the Brauhausberg with arguable pronouns; the Hauseninsel (Island of Peacocka)
in the river Havel, which is 2000 paces long and 500 broad, with fine grounds laid out in what the Germans call the 'English style,' and containing many foreign animals; the Russian colonists Alexanderstal, established in 1625; and three times the size of the palace of Frederick II., which is only one story high, with a circular pavilion at each end, in one of which the king's library remains exactly in the same state as at his death. The palace stands on an island and commands a fine prospect. The gardens are very extensive, and laid out with much taste. (2) The Marble Palace; and (3) the New Palace, a very magnificent building founded by Frederick II. The population of Potsdam on the 1st of January, 1838, was 22,560, and the garrison, which varies from 6000 to 10,000 men.

(Dietrich, Übersicht des Verkehrs im Preussischen Staate, &c., 1838; Hirschelmann: Cannabich: Stein; Müller: Geschichte der Potsdamer Kunstwerke, 1835; Heidenmann, Topographisch Statistisches Worterbuch der Preussischen Monarchie, 1836; Schlielien, Gemälde der Preussischen Monarchie, 1830; Official Population Returns for 1837.)

POTTER, PERCIVAL, was born in London in 1713. He was intended for the Church, in which, under the patronage of his relation the bishop of Rochester, he had good prospects of preferment; but nothing could induce him to give up his studies and he entered upon a collegiate course of study at Cambridge in 1729, apprenticed to Mr. Nourse, one of the surgeons of St. Bartholomew's Hospital, and one of the few by whom anatomical lectures were at that time delivered. In 1736 he commenced private practice; in 1740 he was elected assistant surgeon of St. Bartholomew's Hospital.

In 1756 he received a severe compound fracture of his leg, and during the confinement which the accident rendered necessary, he commenced writing the surgical works for which he has since been justly celebrated. His first publication was a 'Treatise on Fractures;' in 1757 he wrote on Hernia Congenital, in 1758 on Fistula Lacerata, in 1760 on Injuries of the Head, in 1762 on Hydrocele, in 1763 on Fistula Inguinalis. He published observed publications on fractures and dislocations, cata- ract, polyplus of the nose, chimney-sweep's cancer, micturition of the toes, and on paralysis from disease of the spine.

In 1787, his time being fully occupied in private practice, he resigned his hospital-surgery, having served the institution for nearly half a century. In 1788 he died.

Mr. Potter's writings are essentially practical, and full of common sense; and the clearness and purity of their style contributed in no slight degree to make them everywhere acceptable. Probably no person of his time had more influence in the improvement of surgery, not indeed by such modern principles as were established by his early pupil John Hunter, but by his 'systematical deduction of judicious simple rules of practice in every subject to which he directed his attention. Many of these rules are still strictly followed both in this country and on the Continent, and some of the diseases which were first described by him still bear his name, as Potter's gangrene, Potter's fracture of the leg, &c.

His works were published collectively in several volumes after his death; the best edition is that edited by his relation and successor Mr. (afterwards Sir James) Earle, in 3 volumes, 8vo, London, 1799, and in subsequent years.

POTTER, PAUL, an admirable painter of animals, the son of Peter Potter, an artist of moderate ability, was born at Eakhurstens, in the year 1625. He received the rudiments of his art from his father, and such was the progress at that fifteen years of age he was held in the highest degree of estimation, and was considered one of the most promising artists of his time. He established himself at the Hague, where he was greatly patronised by Maurice, Prince of Orange, for whom he painted some of his finest pictures. Here he married, in 1650, the daughter of an architect named Balkenende, in whose house he resided, and where he lived in the utmost luxury, and enjoyed the natures of a delegate constitution, which by his unremitting attention to his art he greatly impaired, and died on the 15th of Jan., 1654, in the twenty-ninth year of his age.

The chief excellence of Paul Potter consisted in his power of conveying life in animals, in which he makes his landscape a subordinate part, but the animals are executed with a correctness of drawing and a delicacy of touch perfectly astonishing. His pictures usually exhibit a brilliant effect of sunshine, in which the skies, trees, and distances evince a remarkable freedom of hand, whilst the principal parts are finished with the utmost delicacy and minuteness. He sometimes painted as large as life, but that most resided in the cabinet-sized pictures. One of the most exquisite of the latter is the cabinet in the collection of Westminster, at Grovernour-house. It is a landscape with cattle and figures. The scene is a view near the Hague, and the picture was painted for Van Singelandt, in whose possession it remained till 1754, when it was bought by a collector and taken to Paris, and was afterwards sold to Mr. Crawford of Rotterdam for 1530l., at a public auction in that city. The size is 1 foot 6 inches, by 1 foot 8 inches wide. The marquis of Hertford has a beautiful example of this master for it. Though the preference is given to his smaller pictures, there is one of a herdsman and cattle, the size of life, which formerly belonged to the Prince of Orange, and is now in the gallery of the Louvre; it is designed and executed with surpassing truth and character, and gained for the painter the title of the Raffles of animals.

Paul Potter designed every object from nature, and it was his constant practice, in his walks in the fields, the only recreation he allowed himself, to sketch every object that attracted his attention; hence in his pictures he expressed the greatest fidelity to nature. Like other Dutch painters, his subjects are sometimes grossly offensive, but in all his cabinet works we find him really up to the highest praise. There are many beautiful etchings by him executed in a masterly style: some are marked Paulus Potter f., and others in. et. f., and a great number of his designs have been spiritedly etched by Mark de Bye. (Bryan's Dict.; Pal- dia, Dict. des Artistes; Universal Dictionary of Biography; etc.)

POTTER, JOHN, D.D., born 1674, died 1747, an eminent prelate of the English church, was born at Wakesfield in Yorkshire, where his father, Mr. Thomas Potter, was a haberdasher, and educated in the grammar-school of that town. At the age of fourteen he entered as servitor of University College, Oxford; took the degree of B.A. in 1692, and in 1694 became fellow of Lincoln College. He had by that time made the acquaintance of Dr. John Haliday, and though so very young, was encouraged by Dr. Charles, the master of University College, to publish a collection which he had made of various readings and notes on the treatise of Plutarch 'De audiendi Poëtas.' This was published in 1694, and was soon followed by a similar work, namely, various readings and notes on an oration of Basil. His greater works soon followed: his edition of Lycephon, and his 'Arctologia Graeca,' or Antiquities of Greece, both published in 1699, and his 'Arctologia Latina,' which was not published until after his death, and these could have been produced by a young man scarcely past his twenty-third year. His Lycephon was reprinted in 1702, at which time he had gained a continental reputation, as appears by his dedication of it to Gravius. His 'Grecian Antiquities,' which was intended for a popular book, having been often reprinted; but it is now far behind the present state of philological knowledge. It contains abundant proofs of the author's learning; but it also shows that he possessed little critical discrimination, a fault however which he shared in common with many other scholars of that time. It was published, in Latin, in the 'Thesaurus' of Gronovius. In 1698 he entered into holy orders, and from that time his studies appear to have been almost exclusively professional, and he passed from one preferment in the church to another till at last he reached the highest dignity. Archbishop Tenison made him his chaplain, and gave him the living of Borthage near Oxford, subsequently other preferments in Buckinghamshire and Oxfordshire. He became chaplain to Queen Anne, and Regius Professor of Divinity in the university of Oxford with a canonry of Christ Church, and in 1715 bishop of Oxford. This he was interested in by the interest of the Marborough family. In the same year he published an edition of the works of Clemens Alexandrinus, in 2 volumes, folio, which is still the best edition of that author. His last volumes were 'A sermon and charge' and a discourse on church government. In 1737 he was made archbishop of Canterbury, which high station he supported with much dignity to the time of his death. His theological works were published at Oxford, in 3 vols. 8vo, 1738.

POTTER, ROBERT, was born in 1721. He was educated at Emanuel College, Cambridge, and took his degree of B.A. in 1741. He was successively appointed vicar of
Scanning in Norfolk, prebendary of Norwich, and vicar of Lowestoft and Kessingland, in the diocese of Norwich. He died there in 1654, in his eighty-eighth year.

Potter published a volume of poems in 1774, and translations of Aschylus in 1777, of Euripides in 1781-82, and of Sophocles in 1788. Of these translations of Aschylus is the best, and perhaps gives a more correct idea of the original than any translation can supply. Potter also published 'An Enquiry into some Passages of Dr. Johnson's Lives of the Poets,' 1783; 'A translation of The Oracle concerning Babylon and the Song of Exultation' from Isaiah, c. xlix. 2, 1785; and 'A Sermon on the Thanksgiving for the Peace,' 1802.

POTTERY. As porcelain is only a finer kind of pottery, the following description will comprehend the mode of manufacturing both.

In the beginning of the last century, it was ascertained by experiment that the earths alone are insufﬁcient, but that when silex is combined with aluminous earth, and subjected to a strong ﬁre, it unites chemically with the clay, as an acid to a base; and that when a third earth, having alka-
line properties, as lime, magnesia, or barytes, is added, a more complete change is effected, and a vitriﬁed body is produced, resembling in density and fracture many natural

gems. When the clay materials are free from metallic matter, a perfect porcelain is thus produced. It was found that seven parts of silex, six parts of aluminous earth, and two parts of an alkaline earth, would produce such a body. On this principle the Germans and French founded their China manufactures. In England the enterprising spirit of Wedgwood wrought a complete revolution in the art, and by bold experiments, guided by his knowledge of mineralogy and chemistry, he laid the sure foundation for all those improvements which have raised the earthen manufactures of this country to an eminence which our continental neighbours are now labouring to rival.

We shall now describe the practice of a potter as carried on in Staffordshire, where the trade has long been cultivated to a great extent, and now affords subsistence to a population of seventy thousand persons.

The materials for earthenware are reduced to the con-
sciss, which are the kind of slurry called slip (slops): this fluidity is necessary to ensure the perfect mixture of all the ingredients, and their mutual chemical action in the ﬁre. The basis of the composition is a clay from the plastic-clay formation in Devonshire or Dorset-
shire, to which is added ground ﬂint, which gives white-
ness and solidity to the goods. For the better kinds, a part of China-clay, or decomposed felspar from Cornwall, is added, together with a small quantity of ground white gra-
nite. The greater density and whiteness of the body, which is increased by the greater purity of whiteness is obtained, and also a degree of vitriﬁcation which makes the ware sonorous when struck.

The clays are thrown into their several vats sunk in the ground, which are blended with water, and sifted through ﬁne silk lawns, into other receptacles, and then diluted with water until a pint measure of clay slip weighs exactly twenty-four ounces; ﬂint and granite slips are made to weigh thirty-two ounces; thus the 'potter mixes by mea-

sure, while his calculations are formed upon the known

weights of the several earths that he is using. The mix-
ture is made in a vat, the sides of which are perfectly verti-
cal, and the quantity of each material to be used is marked by notches on a rod or guage-stick, which the foreman, who superintends this process, dips into the vat, while the slip-
maker pours in the slips, until each rises to its proper mark on the mixing-rod. The whole is now thoroughly incorpo-
rated, and is lifted by a pump into a vessel, from which it descends, through a tap, into a silk sieve, which is kept in constant agitation while the ﬂuid is passing through it. This process of sifting is repeated once or twice more, in order to ensure not only the ﬁneness of the body, but the complete amalgamation of all its parts. The slip is then pumped on to a boiler, or slip-kiln, the bottom of which is formed of large ﬂat ﬁre-bricks, under which four or ﬁve parallel ﬂues pass from the ﬁre-place to a high chimney. The water is then evaporated by a steam and falling masses, brought to a proper consistency for working; but, the steam having given it a cellular and porous texture, it requires to be beaten or wedged until the sir is driven out and a section of the mass, when cut, is smooth and compact.

The business of the slip-house requires the utmost vigil-
ance on the part of the potter. Ruinous losses have often been suffered through inattention to this department, and the error has not been detected until the goods have been finished, when the circumstance of the glaze peeling off, or the body of the ware splitting, warns the unfortunate manufac-
turer to look to his materials, or the bad management of the slip-house.

The following are useful and safe forms for the mixture of earthenware bodies.

**Cream-colour or Printed Ware.**

- Dorset clay 56 or 60 or 66
- China clay 27 15
- Flint—slops 24 10
- Cornish granite 3 2

**Dracl-coloured Ware** is made of the fine grey marl found between the coal strata, which burns to a cane-colour in the oven; or a white body, as above, is stained with oxide of nickel, which gives it a greenish drab tint; or with oxide of manganese.

**Drab body.**—Cane marl 32 or or 56 or 26
- Dorset clay 22 43 20 46
- Cornish granite 45 59 24 25
- Oxis of nickel 7 1
- Manganese 2

The granite in the above bodies gives great density and a very close ﬂinty fracture.

**Brown or Chocolate bodies** are made with a basis of the red ochre, obtained from the red-marl formation above the coal strata. A great variety of tints may be obtained by judicious combinations of oxides of iron, as um-
ber, calchedon, coppers, &c.

**Brown.**—Red clay 58 or 60
- Dorset clay 15 10
- Flint 2 10
- Manganese 2

**Egyptian Black,** for tea-pots, ink-stands, &c., is made in the same way, but with a larger portion of the oxides of iron and manganese, which are now supplied on the market.

**Black.**—Red clay 45 or 34
- Dorset clay 36 42
- Manganese 13 12
- Protioxide of iron 6 12

**Base bodies** are produced by the mixture of a small quan-
ty of oxide of cobalt with a fine white body; when made of vitreous materials, so as to give a gem-like surface without glazing, it is termed Jasper. This beautiful article is well known by the splendid productions of Mr. Wedg-

dow, which the innovations and changes maintain their un-
rivalled excellence to the present time.

**Jasper bodies.**—

- Sulphate of barytes 48 or Carbonate of barytes 34
- China clay 10 China clay 15
- Dorset clay 24 or 24
- Flint 10 Cornish granite 33
- Gypsum 2 White lead 3

These mixtures give a ﬁne white body for ornaments, which may be stained blue by the addition of one-third of a part to one per cent, of oxide of cobalt, according to the strength of the tint required; or a green Jasper may be pro-
tected by staining with protioxide of chrome.

A body called turquoise has been manufactured to a great extent for a few years past. It is nothing more than a ground body, stained with a mixture of oxide of cobalt combined with a large proportion of oxide of zinc; when glazed, it has the peculiar milky tint of the gem after which it has been named.

In this manner, by a proper combination of metallic ox-
idles, either on the prepared clay materials, or prepared from their metals, an inﬁnite variety of coloured bodies may be produced. They are usually prepared on slip-kilns of small dimensions, the bottoms of which are covered with a layer

of plaster of Paris, if used for the mixture of oxide of cobalt combined with a small round plate on the top, at which the thrower sits. He receives the clay
prepared to the proper size by a woman, called the baller, and then upon the whirling table, between his knees, which is put in motion by the wheel-woman, whose eye watches every motion of the thrower, and regulates the velocity of the work with perfect accuracy. The thrower first draws the clay up into a pillar, then depresses it into a flat cake, until the whole body is in a state with the arrangement of all its parts. He then opens the hollow of the vessel with his thumbs, and continues to draw out the clay, or press it inwards, until the desired shape is given to it. With a few turns, and a blow from the brass wire, and placed on a board, which, when full, is carried into a stove-room to harden.

When a number of vessels of the same size are to be prepared, they are thrown, so that their top edges just touch the top edge of the article when it is revolving; this fixes both the height and diameter of all that are made after.

When the vessels are sufficiently hardened, they are turned upon the lathe similar to that used by wood-turners. The turner deliberately shaves away the clay to the proper thickness, and works the mouldings, &c., polishing the whole with a steel burnisher. Eccentric movements are sometimes used, by which the turner produces ornamental lines and variations of the surface; but this kind of work having lost its value owing to the caprice of fashion, there are now few workmen who are able to execute such beautiful specimens of the turner's art as were common about forty years ago. In the modelling, the turner takes the rough turned vessel on the slip-house, where they are blended with new clay, the dextrousness of which is much improved by the mixture.

The turner frequently ornaments bowls, jugs, &c., with a concave or convex surface of the work, and blends with each other, so as to give a marbled surface. By these earthy pigments he produces an infinite variety of patterns. This kind is called dipped ware.

Such articles as require handles are sometimes spouts, and attached to the handle, which makes those appendages in plaster moulds, and sticks them to the vessels with liquid clay. Plain handles are pressed by a syringe through a hole of the proper size and form, and as the clay comes through in a mass, as it is cut off, and bent into the desired shape for the handle.

Thrown and turned goods are sometimes ornamented with figures in relief, which are made out of flat moulds by children, and fixed upon the walls of the drying huts when the clay is dry. The stoneware is fired with a bit of coal, and the plate, in the form of a square or round, is placed upon a stone in the floor, and heated by a fire of coals; and when the plate is perfectly dry, it is placed in a stove to be hardened, and kept there until the bottom is hardened. The bottom must not be too large, for the stoneware is not stout enough to support a large piece, and the bottom becomes too thick, and the vessel is not glazed properly when it is turned out. The bottom is generally turned out immediately before it is thrown to the stove-room, in which the moulds are ranged on shelves. All being ready, the plate-maker cuts his clay into lengths with a wire, and tears off a piece which he battle out thin upon his block by a stroke or two of his battle or plaster-mallet, and, with great dexterity, press his finger into the side of a long smooth knife across it. During this process, which occupies but a few seconds, the boy has brought a mould, placed it upon the whirler, and taken his place at the handle of the jigger: the man places the clay upon the mould, and as it is thrown, the boy instantly catches hold of the mould, and the man and his fellow apprentice are at work; the boy is placed in the oven, and the earthenware tool which gives the form to the bottom of the plate, is pressed upon it as it revolves, the superfuse clay being cut off by a wire: the boy instantly catches hold of the mould, and the man and his little bare-footed assistant moving in perfect harmony, as if their several limbs were all under the volition of one mind. When sufficiently hardened, the bottom of the plate is glazed, and when taken off the mould, the edges are smoothed and polished with the most leather. Cups, saucers, and hand-basins are now made by this process, instead of being thrown and turned as formerly. By this means they are supplied at a cheaper rate; one man and a boy being able to manufacture the articles which by the old mode requires the work of three men and three females.

Casting is resorted to when a mould is so intricate as to be difficult for the workmen to fill by pressing. Slip clay is prepared by being poured into a mould, and a coating of clay is deposited upon the inside; the remaining fluid is then poured out or drawn with a syringe, and a thicker mixture is put in, and left rather longer than the first before it is hardened, it is then put into a stove to dry. Goods thus made are very light.

When completed by the workman, the goods are placed on boards to dry, before going to the biscuit-oven, in which they receive the first fire. The biscuit-oven is a cylinder of fire-brick, hooded with thick girths of iron like a chimney; the ordinary size in Staffordshire is fifteen feet in diameter, and about seventeen feet high, inside measure. Nine fireplaces or mouths are built round it, from which short chimneys ascend; the centre is occupied by the fire, and the flames, are ranged from the mouths under the heart of the oven, and converge to a pit in the centre, from which the flames ascend through the midst of the oven: the heat is thus distributed as equally possible, though a uniform temperature throughout the whole oven can never be obtained. Goods which will bear the highest heat are therefore placed in the outer range, where they receive the full force of the flames entering from the mouths; while colours which are less durable, and of a kind which can not sustain such a temperature, are placed in the inner parts of the oven. The ware to be thus burnt is placed in saggers made of crucible clay; in shape they resemble hat-boxes, and are made by being piled up in a barrel, or in the same way as the clamp, and it, and protect the goods from the immediate contact of smoke and flame. The consumption of these saggers is very great, and forms an important item in the expenses of a pottery. When the oven is filled, the door is built up with fire-brick, and butted with a compost to prevent the access of air. Apertures are left at the front and back of the oven, closed with a brick, which can be withdrawn at pleasure; opposite these the trial saggers are placed, containing the pyrometers, which are drawn out at intervals by the fireman. These trial-pieces, or pyrometers, are hoops of Egyptian black clay, which when unburnt are of a red colour, but change in the fire, through all the intermediate tones of coal, from firebrick: the temperature of the pyrometers can thus ascertain the state of the oven, and accelerate or check the ardour of the fire in the different mouths as he may think proper. The fire for a few hours is kept very moderate, until the goods are turned, which is usually done by placing the whole contents of the oven warmed; the fire is then gradually increased, until the whole is brought to a white heat. In this operation a biscuit-oven consumes about eleven tons of coal. When, from various causes, the fire is not kept up sufficiently, the goods are rejected and thrown away; the workman then proceeds to take down the wall, &c., and the master loses his materials. The ware is now called biscuit, and in this state goes to the printer or biscuit-painter to be ornamented.

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The printing of earthenware is effected by transfer-papers from engraved copper-plates; the wear of which is so great as to give employment to a great number of engravers, and to form, together with transfer-papers, glases, and clays, a large part of the prime cost of earthen manufactures. A set of engraved plates for a table-service commonly costs 130l. or 150l. and will, with proper care, print 2000 dozen services before it wants recutting. The ink used in printing, is boiled water, but some have the samal of sulphur, or Barbadeso tar; almost every printer has his favourite recipe for making this tenacious oil, which is the vehicle of the colour to be used.

Black, or oxide of coal, mingled with flint or carbonate of lime so as to dilute it to the proper tint.

Lilac, of smalt 2 parts, manganese 1.

Brown, zaffre 2, lilac 2, antimony 1, manganese 1.

Red brown, manganese 12, lilac 2, flint 2, glass 1, borax 1.

Orange, lilac 6, antimony 4, oxide of tin 1, oxide of iron 2.

Pink, subcarbonate of tin and carbonate of lime, equal parts.

Green, oxide of chromiwm. The tints varied with cobalt or tin.

Black, red-lead 40, antimony 24, manganese 15, wrought together, then add oxide of cobalt 10, oxide of tin 5.

The colour having been ground very fine, the printer blends it with his oil upon a hot stove, and filling the engraved plate with it, takes off the impression by the common method. The paper-papers are first prepared with a solution of soap. As soon as the print is taken, a little girl cuts out the engraving with scissors and hands it to the transferer, who carefully places the print upon the biscuit ware, which being submerged, holds it in position. The transmitter then passes it to her assistant, who with the end of a cylinder of flannel, tightly rolled and bound with twine, rubs the print with such force as to work the ink into close contact with the biscuit. The glazed paper, upon which the open print is placed, and the paper are then put into a tub of water, and the paper being wiped off with a sponge, every minute point of the engraving is found accurately transferred to the earthenware. When dry, the goods are packed close, and宜, either in a large muffie, or kiln, round which a fire circulates, and brings the whole to a low red heat. By this means the oil is burned out of the colour, which would be injurious to the process of glazing which follows.

Some patterns are executed on biscuit by painta, who lay on the colours in gum-water, in which case the firing in the muffie is not required; but the choice of colours in this kind of painting is rather more exact, as the heat of the glazing-oven and the chemical action of the materials of the glaze, have a peculiar action on the tinting. It is found to be necessary to put so many colours which are used by the enameller upon the glaze.

The biscuit-ware, thus ornamented, is carried to the dipper, who dips each piece into the tub containing the finely ground glaze, and when the glaze is found to be well coated on the ware, this is glazed in water, which, being absorbed by the biscuit, leaves a thin cover of glazing-powder upon the surface; a dexterous shake of each piece in a circular motion, as it emerges from the fluid, prevents the glaze from setting unequally, and throws off all that is superfluous. The composition of glazes requires much attention from the potter; if not sufficiently soft or fluent, the goods are deficient in brilliancy, and are rough at the edges; if too much so, the glaze runs down unequal, and is apt to craze. The glaze also requires to be adapted to the body which it is to cover and to the colour of the ornaments. Blues require a glaze which will supply oxygen, to bring the coals to the state of peroxide; while greens, on the contrary, should be covered with a glaze as free from oxygen as possible, and rather carbonaceous, in order to bring the chrome to the state of protoxide. The white-lead or nitre, therefore, which are beneficial in the first case, are very injurious in the latter.

The following glazes are excellent, and have been successfully used in the Staffordshire potteries; they must be prepared with much care.

Cream-colour glaze. — White-lead 66, Cornish granite 22, flint 12.

Printed ware glaze. — White-lead 45, Cornish granite 28, flint 15, flint-glass 12.

The glazes, and the ingredients are simply ground together, and are therefore called raw glazes, in distinction from such as have a portion of the materials first united by calculation into a frit, or incipient glass; by this practice, a more complete combination is effected, a thinner coating is obtained, and the glaze when in consequence is less liable to craze with change of temperature.

Fritted glaze. — Cornish granite 30, flint 16, red-lead 25, soda 12, borax 17. Mix, and calcine in the easiest part of the heating. The glaze is then lined with a solution of borax 10, red-lead 25, soda 5, and borax 50. Grind the whole with a little oxide of cobalt, to increase the whiteness.

Drab ware glaze. — Litcharge 36, Cornish granite 20, flint 2.

Blue glaze. — Flint 40, borax 24, red-lead 16, Cornish granite 7, soda 5, oxide of tin 5, oxide of cobalt 5. Calcine it together, then grind with the addition of a little pearl ash.

Green glaze. — Dissolve six pounds of sulphate of copper, and precipitate it with a solution of borax; to which add 10 quarts of white glaze.

Yellow glaze. — Colour a white glaze with king's yellow, to the depth of tint desired; or chromate of lead.

Black glaze. — Red-lead 74, flint 14, manganese 1, protoxide of iron 2.

When the goods have been dipped in the glazing mixture, they are dried, and placed in saggers, which are washed on the inside with a compound of glaze with lime and clay. Every piece is carefully placed so as not to touch another; otherwise, when the glaze melts, they will adhere. The saggers are then put into a long oven, in the form of triangles, stills, pegs, &c. are adopted for the purpose of preventing adhesion; while the sagger is so filled that there may be no room lost. The glazing-oven is much smaller than the biscuit one, being 12 feet in diameter, and 15 feet high, and consumes seven tons of coal at one firing.

When drawn from the oven, the ware is carried into baskets to the glazed warehouse, where it is again subjected to a close examination; every piece is sound, and all the projections thrown up by the glaze on the inside are then cut off with steel chisels or files: it is then ready for sale.

We have thus far described the potter's art as it is practised in Staffordshire, where it is carried to a degree of perfection which has enabled the enterprising manufacturers of that district to secure a good recompense for their industry in all countries which are not closed against them by fiscal regulations. In addition to our own colonies, the United States of America, South America, the north of Europe, Italy, and the Levant are largely supplied from the Staffordshire potteries. [EARTHEWARE.]

Porcelain is a finer species of pottery, in which the ingredients are so contrived that they act otherwise upon each other than in the common ware. The glaze has a more perfect covering, and the vessel is in consequence less liable to be spotted by water. When the porcelain is coloured by metallic matter, it is quartered into a number of small pieces, and then put into a tub of water, and the porcelain is eventually removed; but when it is perfectly free from colouring matter and is translucent, it is called China; of which there are two species, hard and soft china.

Hard china is made of silicon, generally a fine sea-sand, kaolin, or china-clay, and felspar; sometimes the felspar is omitted, and a small quantity of seioite, or carbonate of barytes, or stromatia, is used in its place.

Hard China body. — Kaolin 76, felspar 14, sand 12, seioite 4. The body is sometimes made in lime-water, and must be ground very fine at a mill.

When the paste is moulded into the desired forms, it is fired in the biscuit-oven at a very moderate heat; when taken out, it is very bisulphate, and opaque. In this state it is then submitted to a second fire of great intensity, which not only melts the glaze on the surface, but vitrifies the entire mass, which thus unites with the softer matter on the surface so completely, that the glaze does not form a coating of glass upon the body, but adheres to it like the surface of a stone polished by a lapidary. This homogeneity prevents any crazing; but this process is one of much hazard, for if the fire is prolonged beyond the critical moment when the vitrification is effected, and the surface has become bright, the goods will be vitrified, and cold as soda saggers. Ordinary English china are made on this principle; but the English have
followed the safer practice which we shall next describe, and which the French manufacturers, aware of its advantages, are now adopting.

Cheruite is made by firing the biscuit to its full vitreosity in the first oven, the shape of the articles being preserved, during their vitreosity, by being imbedded in a flint-powder, &c.; and then glazing in the second oven at a higher degree of heat, so as not to endanger the melting of the glazes. The union between the two bodies and the glass is however more complete than in earthenware, the glazing-fire being much more intense. Bones calcined and ground are largely used in the manufacture of English china, combined with aluminous and silicious earths in such proportions that they will vitrify together. This effect is promoted by the phosphoric acid of the bones, which at a high heat diffuses itself through all the materials, and unites them into a firm and durable body, which will sink the bone lose its form than the hard porcelain; it therefore may be made in larger ovens, and with less risk of loss to the potter.

English China Body.—Bone 46, china clay 31, Cornish granite 23. For large pieces, such as dishes, &c., a little Dorset clay is added, to give more ductility in working and more stability in the fire; but when great purity of whiteness and transparency are wanted, a higher degree of vitreosity is obtained by fritting siliceous and bones together as the basis of the body.

Fritted China Body.—Bone 55. Lynn sand 27, potash 3, calcined together; then ground fine, with china clay 18.

Glaze. For China is harder than for earthenware; the following are very excellent. Cornish granite 25, soda 6, borax 3, nitre 1; mix, and frit in glass-oven; then take frit 26, Cornish granite 26, white-lead 31, flint 7, carbonate of lime 7, oxide of tin 3. The whiteness is increased by the addition of a little oxide of cobalt.

Another China glaze.—Felspar 38, Lynn sand 24, carbonate of lime 11, borax 27: to be fritted. Then take frit 36, Cornish granite 26, white-lead 20. The application of the glaze and mode of firing are the same as already described.

The decoration of china by enamel colours and gold affords employment to a great number of both sexes, some of whom attain great excellence in their beautiful art. The colours used are all prepared from metallic oxides, which are ground with fluxes, or fusible glasses, of various degrees of softness, suited to the peculiar colours with which they are used. The flux of most general application is made of red-lead 6, borax 4, flint 2. When painted, the goods are placed in the enamel-kiln, where the fluxed colours melt, and fasten to the glazed surface, forming coloured glasses. The nature of the flux and the manner of application requires much study, and is still susceptible of improvement by the aid of chemical science.

Blues are made from cobalt, varied by the addition of the oxides of iron, manganese, and copper. Phosphatic acid gives it a very fine purple tint; alumina also variegates the blue.

Green is from oxide of copper, melted with a soft flux, and ground; its tints are varied by adding blue or yellow or white enamel. Fine greens, which bear a fire that destroys a copper-green, are made from protioxide of chrome, varied with the addition of cobalt, lead, tin, or alumine.

Red.—Nitrate of iron, dichromate of lead, or mixtures of manganese.

Pink.—Subchromate of tin.

Rose colour.—Gold and tin (precipitated of caustis) with a little silver.

Brow.—Chromate of iron or antimony, lead, and manganes.

Orange.—Antimony, tin, and iron.

Yellow.—Antimony, tin, and lead; also chromate of lead.

Black.—Oxide of platinum or iron, cobalt, nickel, and antimony.

White.—Arsenic and tin.

An infinite variety of tints may be obtained by a skilful combination of the above with suitable fluxes, the description of which in detail would exceed our limits. Few potters prepare their own colours; they are supplied by persons who devote themselves to that art.

Gold is applied to china in the state of amalgam ground fine; it is not a metal suitable for the glaze. Thus gold, oxidized by being thrown in a melted state into aquafortis, 1 ounce; quicksilver 14 pennyweights, oxide of bismuth 1 penny-weight, chloride of silver 2 pennyweights. In the enamel-kiln, the bismuth and silver melt, and fix the gold to the china, without involving it so as to prevent its being tarnished, which process is performed by females with agates.

POTTO. The yellow Maucauca ofPennant, according to whom the last-named animal isPissarra caudateolaof Schreber, was called a Potto by its keeper. It had a bone in the hand which bears the name of Buffon. Pennant describes as distinct from the yellow Maucauca, though by form and manners a proper concomitant of it. Pennant thus describes theKinkajou after Buffon:

Mr. Wossel was of opinion that the Kinkajou is a species of Potto, a suggestion which was not made by Buffon. Pennant describes as distinct from the Yellow Maucauca, thus by form and manners a proper concomitant of it. Pennant thus describes the Kinkajou after Buffon:

Kinkajou takes the form of a great good-natured dog; it has a variety of cries during night; one like the low barking of a dog; its plaintive note is crying; its mewing, hissing; its angry, confused. It is very fond of sugar, and all sweet things: eats fruits and all kinds of vegetable. It will fly at poultry, catch them under the wing, suck the blood, and leave them without troubling them: prefers a duck to a pullet; yet hates the water.

Thus we see that the Kinkajou, which we have seen (and though two species have been described, we believe that there is but one at present known), have not any part of the tail naked, and therefore, if Pennant’s description be correct, his Kinkajou must be a different animal from that generally known under this name. They belong to the genus Cercolepites, III. A South American form. Pennant names his Kinkajou, the Mexican Wessel.

Mr. Swainson treats the Potto and Cercoleptes caudateola, the name labelled on the three specimens of Kinkajou in the museum of the Zoological Society, as identical; and so do the French and Fischer. ‘We have now,’ says Mr. Swainson, ‘only to consider the other animal treated of by the Pallas, which is evidently the true Kinkajou.’ This singular quadruped is a native of tropical America; and not only in its aspect, but in its general structure, has so much the appearance of a Lemur, that some of the naturalists have even considered it as a Lemur. It is very remarkable for its long, tapering, white tail, which it frequently holds round itself, when sitting or lying down, by joining the confines of that family. Like them it has a very long hairy tail, which is moreover prehensile; it is a nocturnal animal with large eyes, and seems naturally to feed upon vegetables. It climbs like a Lemur, with agility; and Humboldt affirms it to be a great destroyer of wild bees—nests, which it opens for the sake of feeding on the honey. On comparing the teeth of this animal with those of the Lemur, it will be perceived that there is a much greater resemblance between the two than there is between those of the Lemur and the Aye-Aye; although in the former comparison sufficient difference exists to exclude the Potto from the circle of the Lemurideae. Baron Cuvier places the Cercoleptes close to the Badger (Erinaceus) yet implying doubts as to this being its true situation; but his brother Frederic, with more judgment, looks on it as a passage from the Lemuridae to the Vespertilionidae, although he thinks that its essential characteristics are doubtless nearer to.
Dental formula of Cercoceps:

\[ \text{Incisors} \frac{6}{6} : \text{canines} \frac{1}{1} : \text{molars} \frac{5}{5} = 36. \]

The Kinkajou is very mild in captivity, and climbs about the chairs, \\&c. in a room, if suffered to go at large. The tail does not seem to be very prehensile, nor does it appear to afford much assistance to the animal in climbing or descending. [Pterodectes: Nycticebus]

Poulton, [Lancashire.]

Poulty, from the French poulet. The term includes all the domesticated birds reared for the table fowls, turkeys, geese, ducks, and Guinea fowls.

Fowls.—The strong and ambulatory feet of the gallinaceous birds adapted to the region where they chiefly resort for their food, and the purposes of incubation: their toes and nails peculiarly formed for scratching up the grains and seeds which constitute the main part of their subsistence; their short wings and the weakness of their pectoral muscles, which cause the heaviness of their flight; a deficiency which is counterbalanced by the strength of their muscles of the thighs and legs that contribute to their powers of running; their gregarious, and, generally speaking, polygamous habits; the ease with which they are domesticated; their wholesome flesh; together with many striking peculiarities in their anatomy, serve equally to distinguish them.*

Some foreign varieties have not even the rudiment of a tail, while others are distinguished by it. The game cock, which is peculiarly a native of India, though for many centuries reared in this country, is distinguished by India as the game fowl reared in the grounds of the East India Company's House. Notwithstanding this, and the fact that they were very much esteemed, and prized for the ornament of the poultry-yard: speckled colours are most generally seen with the fowl.

The Chittagong, or Malay, which is a very large Indian variety, is generally long-legged, with yellow body and coarse yellow flesh. Fanciers used to like them for their fine appearance and their large eggs; but as their long legs incapacitate them from being sitters, they are not considered general favourites. One of our practical acquaintances recommends the male produce of the Polnad and Chittagong as a good cross with the common dunghill hen, as their progeny will sit.

Parmentier thus describes the cock:—

‘He is considered to have every requisite quality when he is of a good middling size; when he carries his head high; has a quick animated look, a strong and shrill voice, short bill, a fine red comb, shining as if varnished; wattles of a large size, and of the same colour as the comb; the breast broad; the wings strong; the plumage black, or of an obscure red; the thighs very muscular; the legs thick, and furnished with strong spurs; the claws rather bent, and sharply pointed. He ought also to be free in his motions, to crow frequently, and to scratch the ground often in search of worms, not so much for himself as to treat his hens. He ought withal to be brisk, spirited, ardent, and ready in caressing the hens; quick in defending them, attentive in soliciting them to eat, in keeping them together, and in assembling them at night.’

Those who intend to rear fowls or any kind of poultry on a large scale, should have a distinct yard, perfectly sheltered, and with a warm aspect, well fenced, secure from thieves and vermin, and sufficiently inclined to be always dry, and supplied with sand or ashes for the cocks and hens to roll in, an operation necessary to keep their feathers free from vermin: running water should be especially provided; for

† Translated by Mr. Dickinson, author of an excellent work on poultry.
THE want of water, of which all poultry are fond, produces constipation of the bowels and inflammatory diseases; and for geese and ducks, bathing is an indispensable luxury. A carefully executed regime of the foregoing meals, as well as for the supply of grubs and grass to the geese. The fowl-house should be dry, well roofed, and fronting the east or south, and, if practicable, at the back of a store or stable, or under the eaves of the house. The extreme heat has the contrary effect. It should be furnished with two small lattice windows, that can be opened or shut at pleasure, at opposite ends, for ventilation, which is frequently necessary; and the perches should be near enough to allow of roosting fowls not being directly above each other.

M. Parmentier has shown* by what arrangement a house twenty feet long and twelve feet wide may be made to accommodate twenty-four hens. CSV this is applicable to the first roosting-perch (rounded a little at the upper angles only, for gallinaceous fowls cannot keep a firm hold on perfectly cylindrical supports) should be placed lengthways, and rest on trestles in each end wall, six feet from the front wall, and at a convenient height, which must depend on the elevation of the house from the floor, which should be formed of some well consolidated material that can be easily swept. Another perch should be fixed ladder-wise (en echelon) from the floor to the tenth inch lower to the back wall, and so on, until there are four of these perches like the steps of a ladder when properly inclined, but with a sufficient distance between the wall and the upper one to allow of access. In general, we believe that the hen, when required, has occasion to examine the nests, which is her duty to do every day at least once, and in the forenoon. The highest of these she can reach by standing on a stool or step-ladder. By this contrivance the hens, when desirous of reaching the nests, have no occasion to fly, but merely to pass from one stick to another. If the size and form of the house permit, a similar construction may be made on the opposite side, care being taken to leave an open space in the middle of the room, and a sufficiently wide passage for the attendant to pass along the walls. It is not at all required to have as many nests as hens, because they have not all occasion to occupy them at the same time; and besides, they are so far from having a repugnance to lay in a common receptacle, that the sight of an egg stimulates them to lay. It is however true that the most secluded and darkest nests are those which the hens prefer.

The nests, if built into the wall, are in tiers from the bottom to the top, the lowest being about three feet from the ground, and a foot square. If the laying-chambers consist of wooden boxes, they are usually furnished with a base, which is very convenient for the laying of the eggs. But the best receptacles for the eggs are those of basket-work, as they are cool in summer, and can be easily removed and washed. They ought to be fastened not directly to the wall, as is generally the case, but to boards fixed in it by hooks after the hens have laid their eggs, which are not within reach of the hens. They will thus be isolated, to the great satisfaction of the hen, which delights in the absence of all disturbing influences when laying. All the ranges of nests should be placed chair-wise, in order that the inmates, when coming out, may not startle those immediately under the nests, which are the most frequented by the hens. WHen sitting, the hens, when the nest is full, will move to another, or the eggs will be abandoned.

For all purposes two cocks in a good run are considered in the poultry counties contiguous to London as sufficient for all in the manner of the house, and for the attention of the mistresses to each cock, which no doubt is on account of the higher temperature there. In a confined yard, five hens are sufficient for one cock in our cold country, and a double set will not answer in very limited space, though on these there are four or more cocks, or should be taken that they have of equal age or size, for in this case they are always jealous and quarrelsome; if one is decidedly ascendant, the other will never presume to dispute with him. It will be judicious as well as to avoid too much intimacy between the cock and the hen, so that the extreme heat has the contrary effect. It should be furnished with two small lattice windows, that can be opened or shut at pleasure, at opposite ends, for ventilation, which is frequently necessary; and the perches should be near enough to allow of roosting fowls not being directly above each other.

In order to have the earliest hens, hens should be induced to sit in October, which they may do if they have moulted early. By attention in this particular, chickens can be obtained in winter. It is not necessary to show the hens, which should be in general to set the eggs as soon as possible after Christmas, in order to have chickens with the forced asparagus in March, when they are worth in London from 7s. to 10s. a couple.

In selecting eggs for hatching, care should be taken that they are not at the utmost more than a month old, but their condition for hatching will greatly depend upon the temperature and air-pressure of the weather: vitality continues longest when the air is cool.

It has been asserted that the future sex of the bird is indicated by the shape of the egg: the round producing the female and the oblong the male. But this is contradicted, and we know not really correct. The laying of eggs is not only to foretell the sex, but even to ascertain whether the egg be fecundated. This however is certain, that if the air-bag (at the obtuse end), which has been mistaken for the germ, and the purpose of which is to oxygenate the blood of the chick, be perforated even in the least conceivable degree, the generating power is lost altogether. These eggs only which have been fecundated by the male are possessed of the vital principle, and all eggs for a hen should not exceed sixteen, as she cannot maintain the necessary warmth to more. It is by no means uncommon with experienced breeders to place two hens on the same day on their respective eggs, and then on the twenty-first day, when the broods are out, to give the maternal charge of both to one of the hens, removing the other to another set of eggs, which, if she be a steady setter, she will hatch as in the first instance. This however must be deemed a cruelty, though some hens would instinctively continue to sit until death. They would however become so attenuated by continued sitting, as to lose the power of communicating to the eggs the necessary degree of warmth. The practice of the Surrey farmers of setting eggs in an open shed while sitting, as less stimulating than barley, which they give to the laying hens on account of this very quality.

Some fanciers use artificial mothers, which effect the purpose of imparting the necessary heat to the young birds. The purpose of the artificial mother is to be contained in a capon to brood them. These artificial mothers—as used by Mr. Moubray, and described by him—are boxes lined throughout with wood. He recommends that a curtain of flannel should be suspended over the opening of the box for the exclusion of cold air.

Mr. Young states that five broods may at once be cherished under an artificial mother. This mother may be either a board 16 inches broad and 16 inches long, resting on two legs in front, two inches in height, and on two props behind, two inches also in height. The board must be perforated with many small gimlet-holes, for the escape of the hatcher, and further, with the skin dressed with the wool on, and the woolly side is to come in contact with the chickens. Over three of these mother's a wicker basket is to be placed, for the protection of the chickens, four feet long, two feet broad, and fourteen inches high, with a lid open, a wooden sliding bottom, and raw with cleaning, and a long narrow trough along the front, resting on two very low stools, for holding their food. Perches are to be fixed in the basket for the more advanced to roost on. A flannel curtain is to be drawn between mother and brothers, for the chickens to run under, from which they soon learn to push outwards and inwards. These mothers, with the wicker baskets over them, are to be placed against the stone wall, at the back of the kitchen fire, or in any other

* Dictionnaire d'agriculture.*
warm situation where the heat shall not exceed 80 degrees of Fahrenheit.

When the chickens are a week old, they are to be carried with the mother to a grass plat for feeding, and kept warm by a tin-tube filled with hot water which will continue sufficiently warm for about three hours, when the hot water is to be renewed. Towards the evening the mothers are to be again placed against the hot wall.

This method is daily a mechanical house for chicks already hatched; but the process of bringing the embryo of organised life in the egg through all the stages of the vital principle, until it becomes matured, by means of heated ovens, has been long and successfully practised in Egypt.

These ovens, which are constructed with bricks, are about nine feet high, with galleries extending through the whole length, and containing chambers into which a man can creep through a vent, a small vent for the purpose of depositing the eggs, which are laid, to the amount of several thousands, on mats or beds of flax over the brick floors. The heat is conveyed through fire-places, and the material of the slow fires, which are most effective, is the dung of cows or camels combined with straw. The fires are kept up for as many days (according to the temperature of the weather) as are sufficient to impart such a degree of heat as will prevent, to the expiration of the twenty-one days required for the hatching of the chicks, care being taken to confine the warmth by closing up all the orifices communicating with the external air. One hundred millions of chicks are said to be thus annually produced in Egypt.

Moreover, an abundance of succeeding generations of birds with fermenting dung in hot-boxes, but unsuccessfully; life was developed, but never matured; the chicks were in some cases even feathered, but long before the full time they lost vitality at length, trials enough to wear out the most enduring patience, with an oven free from the influence of the vapour exhaled from the dung, which in the previous experiments had been destructive of the vitality. In trials successive of a great degree, by using a box or shelves over an oven, with due regard to uniformity of temperature. Several of the eggs in this latter case were hatched on the twentieth day, by which the usual time was anticipated by the day. But though artificial hatching has long been practised with success in Egypt, it has not been found worth the expense and trouble in France, from the variableness of temperature there compared with that in the Delo, where, in the autumnal season, when the marshes (hatching-ovens) are used, it is remarkably steady and extremely warm.

Since the attempt to pursue the Oriental system has failed in France, there is no probability of its succeeding in the United States. But, in this respect, the means, the means that success may not attend such management as will obviate the obstructions which arise from irregularities of temperature. The object was partially attained some years ago by Mr. Mr. Bucknell of Bucknells, by means, but unfortunately not uniformly attended to, and consequently that experiment failed. It would appear however that the application of the Cecalebione machine now exhibited in London by Mr. Bucknell, the inventor and proprietor, may be successful. Mr. Bucknell asserts that his cecelebione possess a perfect and absolute command over temperature from 300 degrees of Fahrenheit to that of cold water; so that any substance submitted to its influence shall uniformly be acted upon over its whole surface at the required intermediate degree within the above range, and such heat maintained unaltered, without trouble or difficulty, for any length of time, and that by means of this absolute and complete command over the temperature obtained by this machine, the impregnation of any bird, not state, placed within its influence at the proper degree of warmth, is, at the expiration of its natural life, elicted into life, without the possibility of failure, while in the case with eggs subjected to the care of their natural parent.

That chickens are thus hatched in considerable numbers is unquestionable, upwards of thirty thousand having been already brought into existence by this single cecelebione machine, now has any difficulty been found in the subsequent rearing of those chickens when proper yards and suitable temperature were provided, more than in the natural way; indeed in some respects less so, as the losses sustained in poultry by the sudden changes of the weather, and the influence of dampness in particular, and accidents connected with it, are very rare. It is because of this that Bucknell's experiment to answer the purpose in every respect, the increase in the production of poultry might be rendered incalculably great by the adoption of his principle on a great scale, wherever the essentials of dry, warm, and proper buildings can at the same time be supplied.

It must have struck even the most superficial observer, that the extraordinary fecundity of gallinaceous fowls is a wise and economical distribution disposed to produce the more abundantly food for man, as in those tribes of birds not suited for his table the female lays no more eggs than she can incubate. With respect therefore to domestic poultry, the most nutritious of all human productions, the rich provision of a bounteous providence is for the first time available to Europe.

The ecelelebione machine, capable of containing 2000 eggs, resembles an oblong box, nine feet in length, three feet in breadth, and the same in height. It has no connection with the walls, against which it is placed on the table on which it stands; its regulating power is within.

The following striking passage from Mr. Bucknell's work 'On Artificers,' above alluded to, will show the importance of this subject in its commercial and domestic bearings.

Mr. Bucknell observes (page 16), 'We call the Egyptians barbarous; the procuring lower orders of life and industry, an example of the unnatural charity of life, good animal food. Is there no evidence of barbarism? If the population of the United Kingdom, which as respects Egypt is as twenty-four to two, were as well supplied with this artificial production as Egypt, it would require, not ninety-two but one thousand one hundred and four millions of poultry annually, for them to be as well fed in this respect as the uncivilised natives of Egypt. But how stands the account in this matter? One hundred and four millions of poultry are annually, or rather starve, upon potatoes alone; another third have, in addition to this edible, eaten or inferior wheaten bread, with one or two meals of fat pork, or the refuse of the abominable, pernicious, and noxious, while a considerable majority of the remaining third seldom are able to procure an ample daily supply of good butcher's meat, or obtain the luxury of poultry from year to year.

On the continent of Europe the population is still in a worse condition: fish, soups made from herbs, a stuff called bread, made from every variety of grain, black, brown, hard, and sour, such as no Englishman could eat; olives, chestnuts, the pulp macarious fruits, roots, starks and sawdust, blubber, train-oil, with frogs and snakes, make up and constitute a good part of the food of the greater portion of the inhabitants of Europe. There is no other cause for this than the unnatural charity of life, good animal food.

The contemplation of the progressive stages through which life is developed and matured in the egg, is highly interesting. The contents of the shells, of the species under immediate consideration, taken out and placed on a plate or a saucer on Mr. Bucktell's table, present the following appearances, according to the respective periods:

On the third day, the embryo organization of the skull, brain, heart, and blood is perceptible by the aid of a magnifying-glass.

Fourth day. The pulsation of the heart is distinguishable by the naked eye.

Sixth day. The chief vessels and organs rudimentally formed; circulation of blood apparent.

Ninth day. Intestines and veins formed, and the deposition of flesh and bony substance commenced; the beak for the first time open.

Twelfth day. The feathers have protruded, the skull has become more vigorous, and the first voluntary movement of the chick is made.

Fifteenth day. Organs, vessels, bones, feathers, closely approaching in appearance to the natural state.

Eighteenth day. Vital mechanism perfectly developed, and the first sign of life heard from the piping chick.

Twenty-first day. The chick breaks the shell, and in two or three hours is quite active and lively.

* For the details and statistics on this interesting subject see the 'Domestic Husbandry,' page 110, 'Libraries of the Inhabitants of England.'
† From 'Eccalism,' 'Treatise on Artificial Incubation,' page 110.
The exit of the chick from the shell is a astonishingly one of the marvels of animal nature ever investigated by naturalists. It was supposed that the mother bird broke the shell; but M. Rœumur has long since detailed the processes, and we ourselves have witnessed the evolution of the chick in the eggshell by its own unassisted efforts. The French naturalist who had now referred this explains some interesting facts: — I have seen chicks continue at work for two days together. Some again work incessantly; others take rest at intervals, according to their physical strength. I have observed the consequences of their inactivity to see the light, begin to break the shell a great deal too soon; for they ought, before they make their exit, to have within them provision enough to serve for several days. Imagination is sometimes too hasty to suppose the un Consumed portion of the yolk enters through the navel. The chick indeed which comes out of the shell before taking up all the yolk is certain to drop and die a few days after it is hatched. The help which I have occasionally tried to give to several of them towards their deliverance has afforded me an opportunity of observing those which had begun to break their shells before this was accomplished; and I have opened many eggs much fractured, in each of which the chick had as yet much of the shell not absorbed. Besides, some chicks have greater obstacles to overcome than others, since all shells are not of an equal thickness nor of an equal consistence; and I think it probable there are different languages, so to speak, in the literal membrane. The shells of the eggs of birds of various species are of a thickness proportional to the strength of the chick that is obliged to break through them. 

There is a caution to be observed in all cases regarding the eggs when the chicks are on the verge of maturity: they should not be stirred when within two days of the event, nor even on the preceding night, absolutely necessary to do so, care should be taken to place them with the broad end inclining upwards, as the beak of the chick is then in its proper position; and if this be reversed, the chick becomes unable to chip the shell, and must therefore die.

Chickens should be fed the day after their birth with crumbs of bread soaked in milk or with the yolk of an egg boiled hard, and they will quickly learn to eat curds, grits, and barley-meal and milk: if not designed for immediate use, they should soon get raw corn, and occasionally alternatives of green food, such as bruised leeks, nettles, lettuce, &c. For the first week they should be confined in a house unless altogether out of doors. After that time they may be let out for a short time in the sun, and gradually habituated to the weather. To render the hen which has already discharged her duty still more productive to her owner, she is frequently confined to a coop, called in Surrey a rip; for some weeks after the chicks have seen the light. Her offspring during this time pass freely through the prison bars, returning at her call or on occasions of alarm to the maternal wings, and then having a supply of air of a different nature in their inimical prison mother, who is kept in this state of confinement until she becomes indifferent to the chickens and disposed to lay again.

The courage of the hen in defence of her offspring has been a common theme of admiration; the force of her maternal solicitude effects the most surprising change in her disposition and temper. Before she attained her maturer age, she is always searching for food, fond of gadding about, and timid in the extreme. Now she becomes generous, self-denying, and intrepid; she assumes the fiery temper of the cock, and becomes a virago in defence of her helpless brood. An anecdote is told by Mr. White, in his 'Natural History of Selborne,' of the punishment inflicted by some hens upon a hawk which had at different times killed their chickens. By some means this hawk was caught, and the owner gave him up to the tender mercy of the hens. In his own words, 'Resentment suggested the laws of retaliation. He clipped the hawk's wings, cut off its talons, and fixing a cork on his bill, threw him down among the brood of hens.' Imagination is sometimes too hasty to suppose that such an act was inspired by the ideas of revenge which inspired centuries of hot blooded rhetoric, new, or at least such as had been unnoticed before. The exasperated matrons upbraided, they exculpated, they triumphed. In a word, they never declazed from bullying their adversary till they had torn him in a hundred pieces.

The same writer calls attention to the language of the fowl, from a pleased twittering to a scream. A laying pullet utters a complaining soft note, but when she has been delivered of an egg, her cackle of delight and importance is loud enough to excite the sympathetic voices of all her companions; when her chickens are hatched, she has a cackle of a different kind, which is aptly compared to a thousand voices united. The crested cock has various notes; his tone and language, for such it is in effect, as he calls his favourites to partake of the food which he gallantly scatters for them, is both to the peculiarity, and very different from his ordinary voice that is so familiar to us.

Poultry are the better for feeding from the very shell, and on this account the heaviest corn is often far cheaper for them in the end than tallowings, as regards the quantity of meal, or the amount of the necessaries of life.

Young chickens may be put up for feeding as soon as the hen has ceased to regard them, and before they lose their first good condition. When chickens are wanted for dinner, two hours after they are killed, and left in the cool yard, and if they have plenty of good food, they will be in the most healthful state for the table, and rich and juicy in flavour. Mr. Mouldray ascertained that pullets hatched in March, if constantly fed high, laid eggs abundantly in the autumn; and if killed in the February or March following, were so excessively fat from the run of the yard as to open more like Michaelmas geese than chickens. Experienced poultrymen in this country in two years' experience with the raisers of geese, which gives a luscious, but in judgment, a very disagreeable flavour to the flesh, which, though not actually diseased, is very inferior to that of the fowl fed large in the common way at the barn-door.

The practice of castration, as is common in the hand is quite common. A machine for this purpose is used in France, by which one man can castrate fifty hens in half an hour. It is somewhat on the principle of a forcing-pump. The throats of the birds are held open by the operator until the stomach is forced through a pipe, which conveys the food from a reservoir below placed on a stool. In fifteen days, fowls are said to attain the highest state of fatness and flavour by this feeding. In addition to the ordinary paste of barley-meal or meal made into little balls with milk, the dried seeds and leaves of nettles have been recommended by the continental poulterers, some of whom give a little henbane-seed to the fowls before they are put to sleep, which appears to give them a better deal of fatness which is considered essential to their becoming rapidly fat, and under the pretext of relieving them from the irritation of vermin, they pluck the feathers from their heads, bellies, and wings. While fowls are fed on the knife, though their bodies are closely confined, their hinder parts are free for evacuation and cleanliness, and their heads are at liberty to take in fresh supplies of nutrient.
The females are treated much in the same way, when they do not promise well for laying or when they have ceased to be fertile; they are deprived of the ovarium. The subsequent treatment is similar to that in the former case. Care is taken to give them a mixture of three or four ounces of punch, and to keep them in a place of moderate temperature, to avoid the danger of gangrene, which, considering the time of the year—midsummer, when the operation is usually performed—is very probable consequences. Pulletts of the largest breed are selected for the purpose, as they yield the greatest weight to the poulterer; and if employed in hatching, cover the greatest number of eggs.

Many times the capon may be taught to hatch eggs and to act the part of a good nurse, with a little bell round his neck to supply the want of a good voice. He asserts that the natural courage and energy of this bird are not abated by the alteration of his condition, in which his auditory enables him to impose on the cocks and hens, so that they allow him to strut about with his former gait of consequent and to fulfill his duties without interference or molestation. This seems incredible, as a bold and haughty spirit under such circumstances is unnatural in the extreme. The pallidness of his head and the diminutiveness of his comb and gills indicate the contrary disposition, and he is so despised by the other fowls that they will hardly come into contact with him.

Mr. Young, in his 'Report of the County of Sussex,' says that much art and attention are requisite to make capons, and that the Sussex breed are too long in the body for success in the operation, by which many are lost. A perfectly fat capon will weigh 30 lbs. at 16 weeks of age.

As soon as fowls are rendered sufficiently fat, they should be killed, or they will lose flesh and become unhealthy. The most humane and expeditious mode of putting them to death is by a smart blow on the head with a blunt-edged stick, such as a child's bat, at the back of the neck. Higgens breaks the vertebrae of the neck by a sudden twist, and never bleed fowls, as this mode of dispatching them dries up the juices of the flesh. They bleed turkeys and geese however, after a stunning blow in the neck, not by cutting the throat, but by an incision in the upper part of the mouth.

Store fowls will feed well upon the tallings of corn, potatoes, and insects, and require little attention except what laying, during which time the food for the hens should be abundant, and their roosting-places dry and warm.

The diseases of all poultry principally arise from cold and dampness, and sometimes from intemperance. If it be a cause. During or after moistening the air, they are very liable to become diseased, as is evident from their dropping appearance, swollen and watery eyes, and the drooping affection of the legs. Severe laying and sometimes causes exposure, and laying which give rise to a change in condition after the moulting season, if they have good food and dry weather.

Chickens are very subject, in wet or variable weather, to a disease called the chip, which appears in about a fortnight after their birth, when they are changing their feathers. Warmth and sunshine are the only restoratives within our knowledge.

The coup is properly an imposthumus upon the rump, which is cured or relieved by opening, squeezing, and basting with warm water. Mr. Mowbray however, who is a good practical authority, states that the coup is a general term for all diseases, though it is chiefly applied to catarrh, which is indicated by watery eyes and running at the nostrils. This last disease resembles glanders in horses, and is infectious, and generally fatal. As all these diseases originate in moisture, dryness and warmth are the best counteracting influences. The nostrils should be washed with soap and water, and the eyes with milk and water. Mr. Mowbray recommends a pepper-corn in dough at first, to impart warmth, and afterwards calomel three times a week as a finish to the cure.

We have had the tracess of a chicken dying of the gaps (which is the incubate stage of roup) cut and opened, and have taken out narrow worms, about half an inch in length, which lay in a luridous fluid. A medical gentleman, now in the county of Kent, has lately seen infected fowls of the same disease by putting the upper part of a feather, stripped for the purpose, down the trachea, turning it round, and thus bringing up the worm, which he thinks is the sole cause of the disease. It may however be the effect of the union of the two.

The pip, which is the same individual considers analogous to the thresh in the human kind (and which is probably a modification of roup), he cures, not by scraping roughily, but by an application of powdered boxwood dissolved in tincture of wine and water, and rubbed on the floor with a hair brush two or three times a day. This at the same time assists the bowels. The flux is not uncommon. Solid corn is the most certain remedy for this disease. Taken at the commencement it will do to once established in the constitution, it becomes incurable, and, according to some, contagious. For constipation, bran or pollard, with milk, beet leaves, and lettuce, afford a certain cure.

Much of the foregoing matter applies to the rearing and management of all poultry. The succeeding observations will be brief.

Turkeys.—The greatest weight to which our domesticated turkey can be made to attain is 30 lbs., and a turkey of even half this weight is a dainty dish.

'The varied plumage of the bird in the domesticated state is well known to every one; and in no species is that sure mark of subjection to man more strongly seen. Every variety, from the grand and majestic capon, through the light buff, and in many instances into pure white, may be observed in these strutting denizens of our farmyards.' (New Monthly Magazine, Recreations in Natural History.) The white turkeys are black when first hatched, but are changed hardy, or nor reared, and the varieties may be stated to only two-fold, the dark-coloured and the light.

The dark-coloured birds are most prized for size and hardihood. Notwithstanding the great price which may be obtained for them in London when fat, the finest young birds may be purchased in Ireland, fit for cramping, in September and October, from 4s. to 5s. a couple, and the light-coloured and smaller ones frequently from 2s. 6d. to 3s. 6d. a couple.

Turkeys, though extremely delicate in their infancy, become very hardy, and, if permitted, will roost on the highest trees, in the cold dry nights of winter, without suffering injury. The hen, which lays many eggs early in spring, thirty days, and covers from twelve to fifteen eggs. It is unnecessary for the turkey cock, as is the case with gallinaceous fowl, to be in constant intercourse with the hen during her period of laying. Two visits from him in that season are sufficient to impregnate all the eggs. She is a very steady sitter, and must be removed to her food and supplied with water, for she would never leave her nest. She wants the alertness and courage and sagacity of the common fowl, and would consider it more proper than the goose, which is an intelligent bird. The turkey hen is incapable of teaching her young ones how to pick up their food, on which account a poultry-maid should always have eggs for the young. There are more than two varieties of turkeys under the name:—

'The author of "Tabella Cibaria" proves it upon the bird that it is 'so stupid or timorous that if you balance a bit of straw on his head, or draw a line of chalk on the ground from his beak, he fancies himself loaded, or so sound that he will remain in the same position till hunger forces him to move. We made the experiment.' We never did; but we doubt it not, though we cannot accept it as proof of stupidity. How much wit may be necessary to balance a straw may be doubtful; but gallant chantecler, has never been charged either with fear or folly, and yet you have only to take him from his perch, place him on the table by candle-light, hold his beak down to the table, and draw a line with chalk from it, so that the bird will remain spell-bound, till a bystander, rubbering out the line, or diverting his attention from it, breaks the charm. Many a fowl have we fascinated in our boylay days.

On account of the constitutional delicacy of this bird, the hatching must be commenced in the spring and when the chicks are hatched they should be guarded from the extremes of heat and cold for some weeks. Rain is almost always fatal to them in their early stage. Curd, boiled eggs, and barley or oat meal, mixed with milk (or water, in case milk should produce looseness), potatoes, nettles, parsley, Swedish turnips, with chopped beet-leaves after a little time, is their proper food. As they retain so

* For a most lively and interesting account of this bird, we would refer the reader to "Ornithological Biography," by an American, London, 1831, p. 184.
much of their original wild nature as to stray a considerable distance, if permitted, the hen should be tied or cooped for at least six weeks, when the chicks will be hardy enough to follow her about, under the vigilant eye however of the poultry-maid, who should beware of their being caught by a Poulterer.

They are soon familiarised to the society of fowls in the poultry or farm yard. Without the advantage of the latter, it is an unprofitable speculation to rear any description of poultry on a large scale; but where a farmer's yard presents facilities, the economy of the time and labour to wash the hen and those of the chicken are suitable, is considerable. The only caution with regard to turkeys, where gallinaceous birds are numerous, is to have separate houses for them at night. These should be very lofty and well ventilated. They may be kept in the same yard in winter, if not too frosty, in pens or trelissen-work. Fowls (which are equally unsocial with the capons of their own kind) have a strong disinclination to roost with them.

When well grown, turkeys supply themselves in their ramblings so far as to require food only when leaving their house in the morning and returning at night. The chances of rearing a second brood are not so great as to render expedient to make the trial. After six months turkeys may be crammed like fowls, but they require a much longer period to render them fully fat. Those great birds which are sent to the London market about Christmas, principally from Norfolk, frequent the same lots as the turkeys from twenty-five to fifty pounds, are usually cooks of the preceding year.

Great numbers of turkeys are reared in Ireland, where the climate is congenial to their nature, and no doubt the home-grown birds are turned out quickly at any attention paid to them, from the facilities with which poultry may now be brought to the great English markets.

Guinea Fowl.—This bird, which is not much larger than the common barn-fowl, is an example of beautiful form and plumage, and though not a source of profit to the peasant who rears poultry for immediate sale, is usually kept where there is proper accommodation, as much on account of the eggs as for the sport. It is a great favourite in the Highlands (those who are well-flavoured) as for the sake of the flesh, which is prized in the London markets when the season of pheasant-eating ceases. The number of hens allowed to the male is about the same as among the gallinaceous family. The cock, little distinguished in appearance from the female, is an attentive and affectionate mate, and even obtrusively so to his favourites, whom he will attend to the nest, and remain with until they have laid their eggs.

There is something original in the males of the Guinea fowl, but not earlier than May. On this account and the difficulty of rearing a late brood, it is more beneficial to keep her entirely for laying, and to put the earlier eggs under a common hen or capon, which will cover from twenty to twenty-five, than to encourage the incubation of the natural parent, which is moreover indisposed to it, especially if under cover. If left to its instinct, this bird would at a late season, in the open air, sit for the natural period, which is twenty-eight or twenty-nine days.

The cock having the same dislike to incubation which characterises the male of pheasants, will destroy the eggs if he can. If reared in a barnyard and the shell is remarkably hard, the chicks break through it at the proper moment, and are soon after as vigorous and ready to eat as the young of any other tribe of poultry.

The peculiar character of the Guinea cock is not agreeable, but, like the scream of the peafowl, it announces with certainty an approaching change of weather. The hen utters a cry when she desires to roost, to call in her companions, to summon assistance, or to give notice of any of those alarms which her nature is so apt to excite. It is as her expressive voice, and in all which cases she is sure of receiving a ready sympathy.

The same food which is suited to the young of gallinaceous birds and turkeys is good for the chicks of this kind; but as they are not often destined to the coops for fattening, a good deal of garden or field green-food may be combined with their grits, &c. after the first month. They have a great relish for roots of every kind, and thrive upon them as well as upon hemp-seed. When designed for the table, they ought to be killed at an early age, at which time the flesh is more than triple that of any poultry of the same age, and very like that of the pheasant, though when old it becomes exceedingly tough. [Pavoni].

Ducks.—The white duck, being the largest of the common domesticated birds, is perhaps the best for the poulterer, though it is not esteemed as dainty a dish as the dark-coloured, such as that bred from intermixture with the Rhone duck, which is also large. The Muscovy variety is said to be a good breeder. One drake is sufficient for five females. It is of no great size, but the female surmounts the male more than the more she can cover (from twelve to fifteen), but Mr. Monbray states that, if well fed, some ducks will lay a great number, and he gives an instance of one laying an egg every day for eight years. They are kept either in tiers or from sixteen to nineteen feet in length, and are called turkey-maid, or duck-maid.

For a fortnight after their birth, ducklings should be kept from rushing into water, to which their instinct soon leads them; and with this view the mother is frequently confined where there is any pond within her reach, to the very similar described, which should be placed on a field of short grass with a flat dish of water near it. The ducklings waddle about in search of insects, and at the maternal call return to the coop. This restraint upon the liberty of the poor mother should be avoided if circumstances permit, for it is necessary to protract her close confinement after more than four weeks sitting is a cruel restraint. It is very common to place duck-eggs under a hen, on account of her excellent qualities as a nurse.

Any kind of meal is good for ducklings at first, and this may soon be varied with potatoes. The refusals of the kitchen will not only support but fatten them; but to have them fat at the proper time, they should be brought up to a dish of pure meal. They will also devour any animal offal, and have no fastidiousness whatever. If allowed to follow a plough or attend on the gardener when his spade is at work, they will soon become so tame as to be willing to remain in the field, and for gobbling up snails and slugs and other such delicacies in the field or garden they are most useful, while they are at the same time putting themselves into high condition, and should be permitted to remain in the open air all the time the crop is growing, but require craming, indeed they act as if they considered it their duty to get fat as quickly as possible, and therefore require no artificial aid.

In a poultry-yard, the ducks and geese are frequently lodged on the lower floor of the fowl-houses, but it is better, if the locality will permit, to give them distinct chambers, particularly where a good pond (free from eels) is available; on the margin of this their huts may be placed with very trifling labour, and an invaluable paling around the whole, constructed at bottom on the principle of the edge-trap, so as to prevent the ingress of rats or weasels, while it affords them a ready outlet, renders this department of the poultry establishment complete, though far too expensive for common adoption.

Many families in Bucks derive a comfortable living from breeding and rearing ducks, the greater part of which, the early ones at all events, are actually brought up by hand. The interior of the cottages of those who follow the occupation presents a very curious appearance to the stranger, being furnished with boxes, pens, &c., arranged round the walls for the protection of the tender charge of the good wife, whose whole time and attention are taken up with this branch of domestic economy.*

Geese.—The proportion of females to the males is the same as in the case of turkeys, and the proportion of incubation and the number of eggs that may be set correspond exactly. The goose lays in a mild spring very early, and on this account (but only with high corn-feeding in the previous winter, and starting the goose too early in the ducking season) two broods may be had in the same year. Unlike the peacock and the Guinea cock, the gander is not only indisposed to do any mischief to the nests, but is very attentive to the hatching birds, whom he vigilantly protects as he sits, with the same kind of care that he takes over the young gulls in due course, less creditable to his paternal character. The goose is a very steady sitter, but usually rises often enough to drink and take sustenance, without it being necessary to remove her from her nest for the purpose.

The early treatment of the gulls or gooslings is similar to

* Such may be seen at the Zoological Garden in the Regent's Park, London.

† Monbray.

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that of ducklings. The mother should be penned up for some days upon dry grass, but neither too early nor very late in the day; best leaves or other green food may be mixed even with the early diet, if immediate fattening be not the object.

Green geese are brought very early to the London market, and are worth at first from 3s. to 12s. each; the finest being made quite into a meal and skinned milk or butter-milk, when from four to six months old: many piefer oats alone.

The management of them in the vicinity of London is thus described to Mr. Moubray—

"Cleanliness, punctuality, and regularity prevail; the business is conducted, as it were, by machinery, rivaling the vibrations of the pendulum in uniformity of movement.

The great object of preparing, not generally, but plentifully, and in short time, is feasible solely by paying unremitting attention to their wants; in keeping them thoroughly clean; in supplying them with proper food (dry, soft, and green), water, exercise on ground, &c.: they soon become reconciled to their new abode and to each other. They are fed three times a day; and it is truly astonishing how soon they acquire the knowledge of the precise time; marching from the exercise-ground to the pens like soldiers in close column. Goslings, or young geese, come to hand generally about the month of March, after which a regular and constant supply of green food is given to them. At first they are fed on soft meat, consisting of prime barley or oat meal, afterwards on dry corn. An idea prevails with many that any sort of corn will do for poultry: this is a grand mistake. Those who feed largely know better, and generally make it a rule to buy the best. The Messrs. Boyce of Stratford, whose pens are capable of holding the extraordinary number of four thousand geese, independent of ducks, turkeys, &c., consume twenty cumbns of oats daily, exclusive of other food."

But though green geese bring an enormous price in the spring, if thoroughly fat, farmers generally find it more profitable to feed goslings on the stubbles, where they supply them with the best food without the expense of sufficient fat at Michaelmas, when ancient custom renders them a favourite dish.

"At Michaelmas by right divine,
These geese are esteemed at Michael's shrine.'

In the neighbourhood of the extensive commons in England, great numbers of geese are kept.

"Noth is needless made; on the barren heath.
The shepherd tends his flock, that daily coop
Drove the good winter from the moody
Different: after them the cackling gosse,
Close, gosse, fedeth warre, to ease her want."—Phillips's "Ode.

But from the system pursued by the monopolizing farmers of turning large flocks of sheep to consume the growing blade, the poor geese have short commons indeed, and gain little except an off and exercise by their ramblings. The cottagers however supply them with the refuse of their gardens, and the goslings, when the harvest come in, are bought up by the farmers, and fattened on their stubbles.

Though young geese are subject to a disease called the cramp, the greater number of those which die in summer are destroyed by starvation, and the change from corn, and other nutritive food, to the miserable herbage which the fields and commons yield; and this constitutes their chief diet until, in the middle of the season, corn and oats in the stool are often fatal to them in the earlier months, if they be neglected. Much mortality also prevails amongst grown geese, wherever the horrible system of plucking them alive prevails, as in Lincolnshire and in Ireland. It is generally urged in excuse for this barbarity, that feathers are most elastic and valuable before the period of molting, and that geese have been thus treated ever since feather-beds came into fashion. The carriage carries some inconvenience with it; for it renders the flesh very tough, and in many respects deteriorates the value of a bird, if it does not destroy it altogether; but the immediate gain from the feathers counterbalance the very humane consideration.

The corming system is practised in France, when the object is to render the liver unnaturally enlarged by disease, with circumstances of great cruelty. We do not intend to give any information upon practices which we cannot recommend, and which we strongly deplore. Egg diet is by certain a way of preserving eggs fresh is by greasing them with some unctuous matter, or immersing them in a strong solution of lime. In packing, they should be laid on end; for otherwise the yolks, preserving their centre of gravity, will sink to the lowest point, and become tainted sooner if they were suspended in the centre.

The only management, besides warmth and high feeding, by which the fruitful succession of goose crops is insured during the winter, is by having pullets and hens of different ages, which, molting at different periods, are not all incapacitated from laying contemporaneously.

POUSSIN, NICHOLAS, was born at Andely in Normandy, in 1594. He was descended of a noble family, but reduced in fortune by the part they had taken in the civil wars. Ewing an early inclination for drawing, he formed an acquaintance with an artist named Quentin Varin, and obtained his father's consent to adopt painting as a profession, of which Varin taught him the rudiments. At 18 he visited Paris, and received lessons from Ferdinand Elle, a Flemish portrait-painter, but in a few months quitted him, having already outstripped his capability of instruction. He now applied himself to the study of composition, in which he made great progress by an attentive consideration of some prints after Raffaello and Giulio Romano, and careful copies of the antique statues, The boy's first efforts in painting were the pictures in the church of the Capuchins at Blos, and some Bachalian subjects for the chateau of Chiverny. At Paris he became acquainted with the Italian poet, who invited him to Rome, but being at that time engaged on the picture of the Death of the Virgin, he was compelled to decline the invitation; in 1624 however he was enabled to undertake the journey. His first request was made with kindness, and to the notice of the cardinal Barberini, nephew of pope Urban VIII.; but that dignitary being sent on a legation to France and Spain, and Marino soon after dying, Poussin found himself deprived of the support that he expected in a foreign city, and without the means of living, set out by the exercise of his art. To supply his wants, he painted many pictures which he sold for scarcely more than the money they cost for canvas and colour, and two battle-pieces in particular only produced fourteen crowns the pair. He formed an intimacy with Francis du Quesnoy, the sculptor, called II Fiammingo, with whom he lodged, and together with that eminent man he studied and made models for working upon, and the most celebrated picture of the Death of Germanicus, and the taking of Jerusalem by the emperor Titus. His patron also procured for him the commission to paint a large picture of the Martyrdom of St. Erasmus, for St. Peter's, which is now in the pontifical palace of Monte Cavoio. These productions established his reputation, and recommended him to the friendship of the Cavaliere del Pozzo, for whom he painted his first series of the Seven Sacraments of the Church of Rome, which were afterwards brought to England, and are now in the possession of the Duke of Rutland, at Belvoir Castle, but one of them was unfortunately destroyed in the fire which occurred there in 1816. He also painted to his patron, for whom he had prepared the designs and some of the cartoons, representing the Labours of Hercules, when the criticims of his brother-artists excited his disgust, and determined him to
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depart again to Rome, to obtain leave to do which he signified a desire to settle some private matters and to fetch his wife to his master. He arrived there in a wintry season, and was admitted, which he adhered to, never to return. He resided in Rome, passing his time in diligent practice of his art, and in the strictest simplicity and privacy of living, until the year 1663, when he died, in the seventy-first year of his age.

Speaking of the style of this eminent painter, Mr. Fuseli observes, 'Though Poussin abstracted the theory of his proportions from the antique, he is seldom uniform and pure in his style of design; ideal only in parts, and often so in female than in male characters, he supplies, like Pietro Testa, antique heads and torsos with limbs and extremities transcribed from the model. As a colourist he was at first most severe; but the practice of the Philistines, he transfigured the very hues of the elements whose ravages he represented, whilst numbers of his other pictures are deformed by crudity and patches. The excellence of Poussin in landscapes is universally allowed, and when it is the chief object of his picture, precludes all censure; but considered as the scene or background of an historical subject, the care with which he executed it, the predilection which he had for it, often made him give it an importance which it ought not to have; it divides our attention, and from an accessory, becomes a principal part.'

Poussin was a profound admirer of the antique, and his mind seems to have been strongly imbued with a veneration for it, and the study of it. His style appears to have so greatly excited his admiration as Raphael. In the sublimity of his conceptions, he is in some instances little inferior to that great master, nor is he much less celebrated for the grace and dignity of his attitudes, and his admirable treatment of the passions. His compositions evidence an intimate acquaintance with the true principles of art. They are simple, grand, and impressive; whilst his drapery is disposed with classical dignity and exactness.

(Bryan's Dictionary; 'Note,' by Fuseli, to Pilkingston's Dictionary; Biographie Universelle.)

POUSSIN, Gaspar, was born at Rome, in 1613. His family was originally French, and bore the name of Dughet; but his father had settled at Rome, and Nicholas Poussin having married his sister, he acquired the appellation of Gaspar Poussin. He studied under his brother-in-law, by whose advice he adopted landscape painting, and soon became one of the most celebrated practitioners in that branch of art. His early works are somewhat hard, but a contemplation of the pictures of Claude induced him to adopt a more easy and graceful style. He has shewn such a facility of execution, that he could paint a large landscape in a single day. His pictures represent the most interesting prospects in the vicinity of Rome, Tivoli, and Frascati. His touch is firm and vigorous, and the foliage of each tree and plant is distinct and clear. The character of a face, the massing of his pictures is simple and grand, and the management of the chiaroscuro very fine. Every variety of effect may be discovered in his works, from the utmost serenity to the most terrific convulsions of nature, and each appropriately treated. His pictures are sometimes embellished with figures by Nicolas Poussin, usually representing some subject of history or fable. There are a few slight but masterly etchings by this great artist; they are a set of four circular landscapes, and a set of four landscapes lengthways. He died at Rome, in 1675. He had a brother John Dughet, called also Poussin, born in Rome about 1614, who was an engraver, but of little note.

(Bryan's Dictionary; Biographie Universelle.)

POW (Mechanics). The present article is not intended to enter deeply into the subject, but only to remove various fallacies connected with the use of the word power, which frequently occurs as an etymology confounding those who attempt to study mechanics without the aid of mathematics.

The word power has obtained a technical meaning which seems to have been fixed to the popular phrase. It is, among the numerous combinations which occur in machinery, the lever, inclined plane, wheel and axle, pulley, and screw, and have been selected, and named mechanical power. Some have treated these all different principles; some authors are reducible to the lever and inclined plane, others to the lever only: but it is generally asserted that all mechanical contrivance is reducible to one or other of these. To which of them the very powerful machine (in its way) which men call a cannon is to be reduced we do not know, not seeing any great likeness in it either to a lever, inclined plane, wheel and axle, pulley, or screw. Again, the notions of the theories of these powers are as various as those of their arrangement: some say that all are creators of power, some that all are powers excepting the simple force, others, that they are but modifications of powers. Those who deny that any of the adaptations above mentioned give power, look for, in the way of their meaning of the word in the action of what are thence called agents, as in the muscular, wheel and axle, pulley, or screw. Again, the notion of the theories of these powers are as various as those of their arrangement: some say that all are creators of power, some that all are powers excepting the simple force, others, that they are but modifications of powers. Those who deny that any of the adaptations above mentioned give power, look for, in the way of their meaning of the word in the action of what are thence called agents, as in the muscular, wheel and axle, pulley, or screw. Again, the notion of the theories of these powers are as various as those of their arrangement: some say that all are creators of power, some that all are powers excepting the simple force, others, that they are but modifications of powers. Those who deny that any of the adaptations above mentioned give power, look for, in the way of their meaning of the word in the action of what are thence called agents, as in the muscular, wheel and axle, pulley, or screw.
In the case before us, A acts against one pound, but not on the
pound; it is A and B together, eleven pounds in all, which
oppose a resistance of eleven pounds offered by the
support or pivot O. The weight B is equivalent to two
pressures, one downwards, at O, of eleven pounds, one up-
wards, at A, of one pound only; and the wind, which the
weight or coiling a spring is expended in minute quantities
over one or more days.

Without entering further into the preceding principle
(for which, in its mathematical bearing, see Virtual Veloci-
ty, we would touch upon some instances connected with the use of a machine, still confusing ourselves to simple exposition of these circumstances, and
avoiding mathematical explanation. Suppose a crane by
which a man, with a certain amount of weight, would
raise a hundredweight through a height of ten feet, working
all the while as if he were raising half a hundredweight,
by a simple pulley, from the deck of a vessel to the wharf.
If this five hundredweight were divided into ten portions
of half a hundredweight each, and if each of these portions
had a rope fastened to it, it would matter nothing, the man-
ner of working being equally convenient in both cases,
whether he raised the whole at once by the crane, or the
ten portions in succession by his several ropes. This supposes
that there is no friction in the parts of the crane, and
that its wheels can be moved without any exertion when
unloaded. Neither of these is true, for the friction of the
wheels of a loaded machine, and even ten pounds are un-
loadable by a machine; costs some exertion to set it and keep
it in motion. So far then the balance is in favour of raising the ten subdivisions of the five hundredweight in succession; and we may now see why the numerous working powers
in the balance is a loss of power. But if we introduce the beneficial
effect produced by the machine, we see that the subdivision
of the weight is avoided, and that the labour thereby saved
may be thousands or even millions of pounds. Moreover, and of machines which are
to work without power applied.

The muscular power of men and animals, the force of
wind, the fall of water, the expansive power of steam, &c.
are real powers, the explanations of which lie in the secrets
of the laws of life, gravitation, and chemistry. A machine
is an adaptation of material elements to one or more
purposes, the life of which is one or other of the powers just
mentioned. The term, as a common term for describing
the wonderful effects of power and adaptation united, to
lay the wonder on the wrong part. Thus we can imagine
a person describing the progress of mechanics in the last
century, by saying that "lance is made by steam, and mines
which would be impossible with water, by the aid of science, are cleared for the miners by machinery." In the
first instance the steam-power is but subordinate; horses or
a water-mill might supply its place without any diminution
of the extraordinary part, which is the adaptation of ma-
chinery to the performance of that which required so many
and varied motions of the fingers. In the second instance,
common pumps, or successions of them, would do as well
as the machinery employed, if hands enough could be found
to work them: the wonder is the introduction of labour to
any amount by the help of steam. The vulgar notion is
that steam, as steam, can adapt itself to anything, and that
machinery is forever necessary.

POWER (Algebra). [Root.

POWER OF ATTORNEY. [Letter of Attorney.] POWERS (Law). [Uses.]

POWNALL, THOMAS, was born at Lincoln, in 1729.
He went to America in 1752, and was elected governor of
the colony of Massachusetts Bay in 1757. In 1759 he
was appointed governor of New Jersey, and soon afterwards
proceeded to South Carolina as governor and captain-
general. He returned to England in 1761. In 1768 he
was elected a member of the House of Commons, and spoke frequently against the war with America. He retired to Bath in 1780, where he died in 1805.

Pownall was a fellow of the Royal Society, and of the
Society of Antiquaries. He was the author of a few works,
of many pamphlets, chiefly antiquarian and political, and
of several papers in the "Archaeologia." Among his more im-

PORTANT WORKS MAY BE MENTIONED HIS 'NOTICES AND DESCRIPTIONS OF THE ANCIENTITIES OF PROVINCES,' LONDON, 1786, 4TO; AND HIS 'INTELLECTUAL PHYSICS, AN ESSAY CONCERNING THE NATURE OF BEING,' 1803, 4TO. A FULL LIST OF HIS PRODUCTIONS IS GIVEN IN WATT'S 'BIBLIOTHECA BRITANNICA.'

(ENCYCLOPEDIA AMERICANA: BIOG. DES COMTEMPORAIRES.)

POZZUOLI, Puteoli (Pirolo, Strabo), an ancient town of Campania, situated on the eastern shore of the gulf of Baiae, five miles west of Naples, from which it is separated by the bay of Pozzollo, through a tunnel which was excavated in ancient times. [Posit.II.] Pozzuoli lies at the foot of the volcanic hill called La Solfatara, and on the western side of it is another volcanic hill called Monte Nuovo. In 1538, on the site of the Lake Nucanu, there was a colony of Cumans, which it was the port, and was then called Dichersiana. It afterwards became allied to Rome, to which it remained faithful in the midst of the general defection of the towns of Campania during the second Punic war. Hannibal tried in vain to surprise it. (Liv. xiv. 13.) A Roman colony (Civium Romanorum) was sent to Puteoli, after the close of the second Punic war, in A.D. 194, (Liv. xiv. 45.) In the Roman period it was the name of Puteoli from 'putei,' the wells, or, as others say, from 'puter,' the stench of its springs, which are impregnated with sulphur. (Strabo, p. 245.) Puteoli was a flourishing place under the Romans, being separated by the wealthy for the sake of its situation and its mineral springs. It is now a decayed town, with about 10,000 inhabitants, and is a bishop's see. The air of Pozzuoli, and especially of the country around it, is considered unwholesome in the summer months. The remains of antiquity at Pozzuoli attract numerous travellers. The temple of Jupiter Serapis is now cleared of the rubbish which had encumbered it for ages; three columns are still standing, and the pedestals of others, and there is a handsome pavement of white marble. Near it is a number of cells and a bath, supposed to have been for the use of the priests. The amphitheatre is in great measure ruined and encumbered with rubbish, in the fall of the hill the travertine stones are cleared. There are also remaining several piers of the ancient mole, which was built on arches like a bridge, so as to allow free ingress and egress to the sea, through the passages: this was done to prevent the accumulation of sand, which is apt to take place in those harbours which are confined by solid continuous mole. It was to the end of the mole of Pozzuoli that Caligula attached a floating bridge, which is said to have reached the opposite coast of Baiae, a distance of about two miles in a straight line, though straight lines are cleared. More than three. (Suetonius, Caligula, 19.) The cathedral is built on the ruins of an ancient temple, the materials of which have been used in its construction. There is also a subterranean conduit, or channel, over 'Centro Camerelle,' which appears to have been a water reservoir. [BAIL.]

In the country around Pozzuoli is found a kind of reddish earth called Pozzolana, which, being mixed with lime and water, forms an excellent cement, that becomes in time as hard as marble, even when immersed in the water of the sea. It is found also at the foot of Vesuvius, where it is of a greyish colour, but is equally good. (Vitruvius, De Archit., 11, 6.) The old mole of Pozzuoli was made by throwing masses of this compound into the sea, and thus this open shore was furnished with a harbour capable of containing the largest trading ships. (Strabo, p. 245.)

PRACTICE, a rule of arithmetic, so aptly termed because it hardly contains any new principle, but depends for its application upon the memory and dexterity which the operator acquires from practice. Thus in the following simple question, 4650 | 20, is 25 yards cost £253 5s. 0d. so, some arithmeticians (unpractised) might find it necessary to multiply 40 by 18 and divide the result by 12, for the number of shillings in the answer; but a practised arithmetician would immediately see that 18d. is a shilling and a half, so that 40 shillings must be allowed for the shilling, and 20 shillings for the half shilling, making altogether 60 shillings. More complicated examples may require the same thought, but the practice of the rule has been completely described in the preceding. Suppose for instance it is required to find the price of 253 yards at 2l. 1s. 7d. a yard. The application of the rule of practice is as follows:—

The process hardly needs more description than is given on the left; the only difficulty is the division of the price of 253 yards by 20, which is a double quotient part of one of the preceding, and this difficulty is to be overcome by practice. It is also to be noticed that easy verifications often occur; thus in the last process but one, it can easily be verified that 2526 farthings is 5s. 4d. 1.

When both the factors which are to be multiplied contain complicated fractions, this rule can be easily applied by turning the money factor into pounds and decimals of a pound, as in INTEREST. Thus suppose it is required to find the price of 22 ton 17 cwt. 1 qr. 19 lb. at 13s. 4d. a ton, or 13*816674. We have then

<table>
<thead>
<tr>
<th>1 ton</th>
<th>costs £13*816674</th>
</tr>
</thead>
<tbody>
<tr>
<td>22 ton</td>
<td>303*966674</td>
</tr>
<tr>
<td>10 cwt</td>
<td>590833</td>
</tr>
<tr>
<td>5 cwt</td>
<td>345417</td>
</tr>
<tr>
<td>2 cwt</td>
<td>139167</td>
</tr>
<tr>
<td>1 qr</td>
<td>8636</td>
</tr>
<tr>
<td>4 lb</td>
<td>92467</td>
</tr>
<tr>
<td>1 lb</td>
<td>00017</td>
</tr>
</tbody>
</table>

22 ton 17 cwt. 1 qr. 19 lb. cost £316*00082

So that the proper answer is not far from attaining 316*. The preceding process is much shorter than the application of the rule on p. 136, and also than a kind of double rule of practice once in use, which is not given in modern works, and is not worth revival.

This method of practice is also a convenient way of reducing fractions of weights or measures to decimals. Thus if 17 cwt. 1 qr. 19 lb. is to be reduced to a decimal fraction of a ton, we have

<table>
<thead>
<tr>
<th>1 cwt</th>
<th>is .05 of a ton</th>
</tr>
</thead>
<tbody>
<tr>
<td>17 cwt</td>
<td>is .85</td>
</tr>
<tr>
<td>1 qr</td>
<td>is .01 of 1 cwt</td>
</tr>
<tr>
<td>14 lb</td>
<td>is .01 of 1 qr</td>
</tr>
<tr>
<td>4 lb</td>
<td>is .01 of 4 lb</td>
</tr>
</tbody>
</table>

17 cwt. 1 qr. 19 lb. is '870992 of a ton.

PREFECTUS URBIS (prefect or warden of the city) was the title of a Roman magistrate. The office was said to have been instituted by Romulus (Tacit., Annul., vi. 11) to supply the place of the kings in their absence from Rome.

Within the walls of the city he was for a time invested with kingly power: he had the administration of justice, and on any sudden emergency he took such measures as he thought necessary; in short, he held the imperium in urbe. (Liv. i. 69.) He was appointed from among the senators. (Dionys., ii. 12.) Whether on the return of the king he laid down this title with his office, is uncertain. During the time of the republic the prefectus urbii was appointed by the consuls or by the senate (Dionys., viii. 64), when the consuls were obliged to be absent from the city. In the early times of the republic he was generally a consular. During the time of his office he exercised in the city the powers of the consul (consulaire munus usurpabat); he had the right to convene the senate (Varro, Ap. Gell., xiv. 7, comp. with xiv. 8), and to hold the comitia (Liv., i. 60). But in the course of time the prefect of the city was superseded by the praetor urbanae. On the other hand, his powers were increased. More or less an appointed person under the empire even appointed several youths under age as prefects of the city. (Tacit., i. iv. 36; Dion Cass., xlix., p. 476.) This shadow of a magistrate seems to have continued to be appointed
during the Feriae Latinae, even after Augustus had made a permanent praefectus urbis. (Suet., Nero, 7.) Augustus invested this new prefect with considerable power, gave him the superintendence of public works, roads, and aqueducts, of all things connected with the navigation of the river, and was even to be the head of the police. (Suet., Octav., 37; Tacit., I. c.; Dion Cass., III., p. 547.) This praefectus urbis was generally taken from the consulars and the most distinguished men of the state. He was also invested with jurisdiction over slaves and turbulent population. This power was thus something like a chief officer of the police; but his powers became gradually more and more extensive, so that almost all the powers formerly belonging to the office of praetor urbanus were transferred to him. By the praefectus urbis (Dig., I. t. 12; De Off. Praef. Urbi, comp. with Tacit., Annal., xiv. 41) and from the beginning of the third century he not only exercised the inferior but also the criminal jurisdiction, and that not only in the city, but at the distance of one hundred miles from it. During the early period of the empire the prefect of the city seems always to have held his office for a number of years, but from the time of Valerian we find a new prefect almost every year. Respecting the titles by which he was addressed, see Brissone, De Form., p. 296. At the time when Constantinople was raised to the rank of the second capital of the empire, it also received a prefect of the city, who, like the prefect in the west, was the direct representative of the emperor and not the first magistrate of the city. The whole administration of the city, all its corporations and institutions were under his superintendence; every month he made a report to the emperor of the transactions of the senate and people (Svyr. and Frac., viii. 3); in the latter capacity he gave his vote before the consuls (Cassiod., Varar., vi. 4), and was the medium through which the emperors communicated with the city.

PRAEMUNIRE (used for praemunire, 'to forewarn,' Co. Lit., 129 b) is the first word of an antient writ by which a party was summoned before the king to answer a charge of contempt against him. The commencement of the writ was at the instance of the king's attorney, and the form sat consul nobis, &c. The contempt consisted in the doing of some act in derogation of the allegiance due to the king. In case of conviction, the judgment was, that the defendant (who had committed the offence of throwing off his allegiance) should be forthwith out of the king's protection, and his lands and tenements, goods and chattels, forfeited to the king, and his body should remain in prison at the king's pleasure. The word praeunire, as now used, has two meanings; first, its original, the other the offence to which the writ is applicable.

In late times it seems to have been considered that the offence was referrible only to attempts to introduce the papal authority into this kingdom; but it would appear that the lord chancellor, when making the interpretation of the offence upon the 'kingly laws of the crown' was equally within the penalties of a praeunire. It is true that most of these attempts did relate to the papal jurisdiction, and the statute 16 Rich. II., c. 5, called the statute of praeunire, relates only to such attempts. But the statute 27 Edw. III., c. 1, referred to by 16 Rich. II., c. 5, visits an analogous offence with the same penalty where one 'shall draw any out of the realm in plea wherein the cognizance pertained to the king's courts, or whereof judgment is given in the king's courts, or which do sue in any other court to defeat or impeach the judgment given in the king's court, &c.' and this applied even where the other court was within the realm of England, and the praeunire was either in common law, or suing before other courts, such as the ecclesiastical, admiralty, &c., in matters whereof the king's court had jurisdiction. These were offences also punishable at common law. (See also 33 Edw. I., 2 3.)

Numerous statutes have defined what shall be such a contempt as amounts to a praeunire. Most of the earlier are directed against proctors, as they were called, or persons who purchased from the court of Rome provisions for holiness, and who were taken away from the college of canons vacant (22 Edw. III., stat. 5, c. 22, stat. 6), or for exemption from obedience to their proper ordinary (2 Henry IV., c. 3), or bulls for exemption from tithes (2 Henry IV., c. 4), or those whoappeared in favor of miracles (2 Henry IV., c. 3; 7 Rich. II., c. 12; 12 Rich. II., c. 15; 13 Rich. II., stat. 2, c. 2), or those who purchased (procured bulls, sentences of excommunication, &c. against the king (16 Rich. II., c. 5). This statute recites that 'so the crown of England, which hath been so free at all times that it hath been in no earthly subjaction, but immediately subject to God in all things touching the regality of the same crown, and to none other, shall be the everlasting and perpetual seat and law of the realm of the same by him defeated and avoide at his will, in perpetuall destruccion of the soveraignetie of the king our lord, his crown, his regality, and all of his realms, which God defend.' During the time of Henry VIII., several citizens were convicted of the praeunire to those who sought or attempted to enforce any bull, &c. from Rome, or appealed there (23, c. 2; 24, c. 12; 25, c. 19, 21; 28, c. 16), or refused to elect a bishop as directed by a bull of the pope (23, c. 2), it was applied to those who refused to take the oath of supremacy, or defended the pope's jurisdiction, abettet publishers of bulls, &c., or sent relief to Jesuits beyond seas.

About this time the penalties of a praeunire ceased to be confined to the class of offences already enumerated. The following enactments however related solely to such offences: 13 Ch. II., s. 1, c. 1, whereby persons who advisedly assert that both or either house of parliament have a legislative authority without the king: J. Jac. I., c. 4; 1 W. & M., s. 1, c. 8, those who refuse to take the oath of allegiance are declared guilty of a praeunire. By 7 & 8 Will. III., c. 4, serjeants, barristers, attorneys, &c. are subjected to the same penalties, and to such penalties the same act added, that all the subjects of the crown, amounts to the same offence. And 12 Geo. III., c. 11, attaches the same penalties to all such as wilfully solemnize or assist, &c. at any forbidden marriage of the descendants of George II. who have not consented to contract marriage without consent of the crown. But during the same period the penalties of a praeunire were attached to persons guilty of various offences of very different nature, as attempts of land grantees by parliament to Henry VIII. and Edward VI.; to brokers or agents in any usurious contract where above 10 per cent. interest is taken, by 13 Eliz., c. 6; to those who obtain any stay of proceedings other than by arrest of judgment or writ of error, on any suit for a monopoly, by 31 Jac. I., c. 3, s. 4; who obtain an exclusive patent for the sole making or importing of gunpowder or arms, or hinder others from importing them, by 16 Ch. I., c. 11. 21 Eliz., c. 34, the same offence of hinderance by which goods were formerly taken at a certain price for the king's use without the consent of the owners (Purveyance) was abolished; an action was given to parties against whom it was attempted to be enforced, and if the action was not brought in time, it was save by intervention of the court in which it was pending, were subjected to the penalties of a praeunire. By the Habeas Corpus Act, 31 Ch. II., c. 2, the same punishment, besides others, is incurred by those who deprive or attempt to deprive any subject of this realm of his liberty contrary to that act. By 6 Anne, c. 23, if the peers of Scot- land convened to elect their representatives in the British parliament, treat of any other matter than the election, they are guilty of a praeunire. After the breaching of the South Sea bubble, those who thereafter engaged in such undertakings were, by 6 Geo. I., c. 18 (now repealed), made liable to the penalties of a praeunire.

The punishment of the judge has already been stated. After judgment, the defendant might formerly have been killed by any man. But Queen Elizabeth and her parliament, liking not the extreme and inhumane rigor of the law in that point, made it punishable by death (15 Eliz., c. 1). Still, being out of the protection of the law, he cannot sue in any action (Co. Lit., 129 b), and he forfeits all his goods and chattels, his lands and tenements in fee, and his life interest in lands in tail. (3 Inst., 119, 'Of Præmunire.')

This statute was revived in the Reign of Charles II. and declared practically absolute. (PRÆNESTE. [Pralestrina.]

PRÆPÆDITUS, a name assigned by MM. Doméri and Bibron to a genus of reptiles belonging to the Sauri- forme, established by Sauri, in 1831, in the family Legosaurus; and placed by those distinguished erup- tologists next to Scelotes, Fitz. (Bipes and Pygogadactylus, Murr. ; Bipes, Cuv. and Gray; Zygma, Wagl.) (Bipes).
Præfectus is the Sordica of Gray, whose name has the priority. The nostrils open in the middle of a plate or scale. There are no auricular apertures, and no anterior limbs. The two posterior feet are without the styli; the body is uniglume, and the scales are smooth.

Example, Sordica lineata, Gray; Præfectus lineatus, Dum. and Bibe.

There is a difference of opinion among the zoologists whether this species of the genus 

\[ P. \text{ lineatus } \]

is distinct from \n
\[ P. \text{ ediciens } \]

or \n
\[ P. \text{ ediciens } \]

The name was first used by Mr. Gray to designate the species which was first described in Mr. Smith's collection at Chatham; and they think that the locality (New Holland) assigned by Mr. Gray to his species is erroneous.

PRÆTOR, a word which apparently contains the same elements as the verb praecipe. The consuls were originally called praetors, but the name praetor was specially appropriated to a magistrate called the praetor urbanus, who was first appointed n.c. 365. He was called a colleague of the consuls, and was created with the same auspices. (Liv. vii. 1.) The praetor was at first only chosen from the patricians, as a kind of compensation to them for admitting the plebeians to fill one of the consulships. (Liv. vii. 42.) In the year 336 the first plebeian praetor was created.

The praetor, in his origin, seems to have been a kind of third consul. While the consuls were at the head of the armies in the field, the praetor exercised the consular power within the city, in the senate, and in the comitia. He also administered public justice. In corruption and some occasions the praetor led the armies of the state. (Liv. vii. 23, &c.) Yet the imperium of the praetor was less than that of the consuls, to whom he owed obedience. The praetor's duty was to act as the check in his own province on the consular or other magistrates, and whenever he had six lictors, from which circumstance he is called Polybius 'the general with six lictors' (\[ θύγρων \] or \[ στρατηγὸς \] ἑαυτοῦ, and sometimes simply \[ θάυταρις \] or \[ θάλατταρις \]. &c.) of praetors. It is generally supposed that the number of praetors was originally given to a consul of the preceding year; and after the plebeians obtained admission to this magistracy, it was given alternately, at least for a time, to the patrician and plebeian consul of the preceding year. As the praetor was a kind of substitute for the consuls, there was nothing in the nature of the office which limited the number: and accordingly in n.c. 247, another praetor, called Praetor Pæergrinus, was created, who administered justice in matters between citizens and foreigners, and in matters between foreigners only. It is conjectured that one praetor was a patrician and the other a plebeian, but this does not appear certain. If one of the praetors left the city to command in the provinces, he had the usual position of the praetor urbicus both within and without the city; and when the military service required it, the imperium of a praetor was prolonged for another year by the senate or the comitia. When conquests were made beyond the limits of the Roman empire, the praetors were placed in form of provinces, praetors were sent to govern them. Thus two new praetors were appointed for Sicily and Sardina (n.c. 227), and subsequently two more when the two provinces of Spain were formed. The provinces of the praetors were determined annually by the senate, and distributed among them by lot. As the judicial labours of the praetors increased, they generally spent their year of office at Rome, and then took the charge of a province with the title of praetor urbicus (Liv. vii. 28). The year of praetorship was increased from five to eight. The praetor urbanus had the highest rank, and was specially called praetor: the duties of his office required his constant attendance at Rome, and he could not leave the city for more than ten days at a time. He had the troublesome and expensive duty of superintending the Ludi Apollinaris and giving gladiatorial shows to the people. Julius Caesar increased the number of praetors to ten, then to twelve (Jul. 31), and after his death reduced it to eight. Tiberius Caesar increased the number of praetors to ten, then again raised it to sixteen, and finally fixed it at twelve. Under Tiberius there were sixteen. A permanent praetor for fides comissi was subsequently appointed (Dig. 1, tit. 2, s. 3), and another for matters between the estates of patricians and plebeians; and a praetor was appointed by the emperor M. Antoninus (Capitol. M. Anton., c. 10) solely for matters relating to guardianship (tutela).

An office like the praetorship in some respects may be treated as quasi BOTV (praetor); frequently the vicarious duties of the office appear clearly in the func-

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of the antient praefectus urbi [PRAEFECTUS URBIS], whose office became of less importance on the appointment of the praetor urbanus. As late as the time of Cicero (Ep. Fam., x. 12, xii. 28), we find the praetor performing the duties of the consuls in their absence. The praetor urbanus became the chief magistrate for the administration of justice, and in this respect his office was the most important in the state. He was one of the magis-
trates who had the Edictum, or edict, in their hands, containing the edicta, which were the foundation of a body of law known under the names of Jos Honorum or Praetorium. The praetor pæergrinus had also the Ju
dicium or the edicta: and the edicta of the praetor urbanus were published generally on entering on his office, and occasionally during its continuance. It is difficult to describe the edicta in exact terms, but they had reference only to civil actions, and their object was generally to provide a new body of law, and mainly by introducing new kinds of actions (actiones utiles) when the actions of the old law (actiones directae) did not apply, and fixing the edicta in such a form as to exclude right, and they contrived by various legal fictions to accommodate the limited provisions of the old laws to the existing wants of society; but in all these proceedings we clearly discern a reference to the ancient law of the Tarquins as the characteristic of the edict. The praetor also interfered in a summary way by his Interdict, particularly in matters of possession [Possesso], in the case of a man who was of unsound mind and incompetent to manage his property, the praetor appointed a curator, when the laws of the Twelve Tables had not provided for one. He also gave relief in cases of fraud whenever the law had made no provision (Cic. Ep. 4, xvi. 3), and generally by the dicta, excepting and in integrum restitution, in the case of minors, he set aside fraudulent transactions. (Savigny, Von dem Schutz der Minderjährigen, Zeitschrift x. 261.) It was stated that the praetor had the power of making the laws of the Twelve Tables before the year, till this was forbidden by a decree of the senate, and finally by a lex Cornelia (n.c. 67). This gave to the edict a character of greater stability. It seems that the praetor's edicta of this period were too numerous and absolute to binding on an actual praetor, were frequently adopted by him. Indeed we cannot conceive that the prætorium jus could have acquired that stability and consistency which it undoubtedly had acquired, even in the time of Cicero (Legg. i. 5), if the chief rules that were established by the praetors were not observed by their successors: The Roman jurists found ample matter for comment in the praetors' edicta, and a large part of their writings had for their object the determination of the principles on which the praetors acted. So much was the emperor Hadrian the edicta of the praetors were collected and arranged by Salvius Julianus, a distinguished jurist, under the name of Edictum Perpetuum, and from that time they were placed to the future use of all acts issued by the praetors' edict ceased. The constitutions and records of the emperors supplied the place of the edict.

In civil matters, except in the cases of interdicta, the praetor did not give final judgment. (Gaius, iv. 139) [In-

præsident.] A person who had a claim against another, which was disputed, applied to the praetor for the purpose of obtaining a reference of the matter in dispute to a judex or judges, with the proper instructions, which were to be maintained in the meantime. If the praetor before the date were in jure, and had reference to the pleadings and various proceedings by which the matters in dispute between the two parties were to be brought to issue.

The praetors also presided in questions, or judicial inqui-

ries into crimes, or that class of offences which were the subject of judicia publica. Sometimes persons (quaestores or ques-
tiones) were called magistrate, (Cic. Brut., 102), apparently because the praetors exercised the functions of quaestores during the whole year of office, and not, as was the old praetor, the occasion of their office, according to their appointment might be appointed. Sulla, by various leges, added to the num-

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ber of quasestiones perpetuum, and at the same time made two additional prelates.

The importance of the praetor urbanus and peregrinus must have decreased after the time when their edictal power ceased to be exercised, which, as already observed, was in the time of Hadrian. (Savinog, Von dem Schatz, &c.) It is true that Gussi, who wrote on the time of Hadrian, says that the praetorius jus ediciendi, sufficiently existed in his time; and so it might in theory, though not in fact. Further, he is speaking of praetorian edicts as one of the sources of Roman law, and it was not necessary for him to distinguish between the two when he says that he could cease to have any force, or had almost fallen into disease.

The praetors existed till a late time under the empire, and still had some jurisdiction. (Præfectus Usus.) They had the name of a select cohort which attended the person of the praetor or commander of a Roman army. Sallust (Caes. Gall., 60) says that Petreius, finding that Catilina and his followers defended themselves more stoutly than they expected, ordered a last expedition, the praetorian cohort to charge the insurgents, and this decided the fate of the battle. In the time of the triumvirate, Octavian and Antony greatly increased the number of the praetorians. Appianus (Mithr., ii.) says that after the battle of Philippi they dismissed all those soldiers who had served their time, except 8000 men who requested to remain in the service, who were distributed in praetorian cohorts attached to the praetors. The praetor of Gaul in the republican party, Augustus formed the praetorians into nine cohorts, and fixed their station in the capital as guards to his person. (Sueton., August., 49.) They became in fact, used by Augustus as a guard. In the time of the Empire the praetorians are mentioned under the name of Praeceptorius. (Sueton., Claud., i., 5.) Under Vitellius the praetorian cohorts were increased to sixteen. (Tacitus, Hist., ii. 93.) In the frequent revolutions of the empire the praetorians acted a conspicuous part, and often determined the fate of an emperor, and the choice of another; as in later times the janissaries did with regard to the Turkish sultans. Diocletian reduced the number of the praetorians, and Constantine entirely disbanded them.

A PRAGMATIC SANCTION is a term that has been used to signify a solemn ordinance or decree of the head or legislature of a state upon weighty matters. The use of it appears to have originated with the Byzantine empire. It was there that it was first defined in usage. In a letter addressed to Louis IX of France, in 1268, Louis issued a pragmatic sanction concerning the discipline and temporalities of the Gallican church. (Bochelius, Decret. Ecclesi. Gallic.) But the most celebrated pragmatic sanction is that issued by Charles VI of France, in 1438, in consequence of the schism in the church between the councils of Basle and Pope Eugenius IV. [Eugenius IV.] In this dilemma, Charles, doubting which of the two contending parties was in the right, assembled a national synod at Bourges, in which legates attended both from the pope and from the council of Basle. In this synod it was decided that the earlier decisions of the council of Basle issued previous to the schism, and which had been ratified by St. Urban himself, were binding upon the church. One of the most important of these decisions was that which asserted the supremacy of the general council over the pope. Twenty-three bishops, however, at this time, entered into a covenant, and the concurrence of both his spiritual and lay advisers, for the regulation of the discipline of the Gallican church, framed upon the council of the council of Basle, and these concords were confirmed by Charles in the year 1439. The most important of these articles were: 1. The election of bishops was declared to belong to the respective chapters, subject to the royal sanction. 2. The court of Rome was no longer allowed to interfere with the king. 3. 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muck (Nepomucenus), the patron of Bohemia. The other old church is the cathedral on the Thein, which was built at the end of the ninth century, but has been disfigured by various additions in the course of the next two centuries. The tomb of the canon Tycho Brahe, who died in 1603. Many of the modern churches, which are chiefly in the Italian style, are worthy of attention. Among the palaces, the Imperial palace in the Hradchín is the most magnificent and grand, and is in the immense extent and its fine and commanding situation. Of the 440 apartments, the hall of Vladislaus is a noble work of Gothic architecture, second only to that of Westminster. Kutna Hora, Velý, 

The university and its learned men, which has had a numerous, if not always a select, attendance, is one of the most ancient in Europe. It was founded by the Czechs in 611; and others ascribe its origin to Queen Libussa in 723. The city has suffered frequently and severely by the calamities of war, especially in the troubles caused by the persecution of the Hussites in the fifteenth century. In 1520, in the contest between the elector palatine and the emperor for the crown of Bohemia, a battle was fought on the White Mountain, two miles from Prague, and in a general naval battle, the elector Frederick V., son-in-law of James I. of England, lost the crown. In 1741 a French corps was blockaded in Prague, and made a vigorous defence, and when reduced to the last extremity by famine, evacuated the city and retreated in good order. In 1744 Frederick II., with 100,000 men, appeared before Prague, of which he got possession, but ten weeks afterwards was obliged to evacuate it. There was some smart fighting in the city itself, the Russians left 2000 prisoners of war, 12 cannon, and 12 mortars in the hands of the Austrians. In 1757 Frederick again besieged Prague, and immense damage was done by the bombardment; nearly 900 houses were destroyed, and the whole trade and manufactures were ruined. The victory of the Austrians at Collin obliged Frederick to raise the siege, since which time Prague has not seen an enemy before its walls.

The inhabitants of Prague are chiefly Bohemians (Saxons and Hungarians), but there are a great many foreign inhabitants, especially from Austria and Russia. The trade of Prague is extensive and its manufactures are numerous and diversified. With respect to religion, the vast majority are Roman Catholics, as may be judged by the number of their churches. The present population is at least 120,000, including about 7000 Jews and the garrison.

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PRAK. [Sanskrit.

PRAE. CHRISTIAN HENRIKSEN, who has left a name of some eminence in Danish literature and poetry, was born September 4th, 1756, in Gulbrandsdalen. After having been educated by his father, who was a clergyman, and next passing a short time at the school at Frederiksborg, he was sent to the university of Copenhagen, where he applied himself to the study of the humanities. He did not however adopt the former as a profession, and though he afterwards continued to give his attention to the other, poetry and literature became his chief pursuits. His continuing to apply himself to the study of literature with his taste for poetry as that of political economy, is accounted for by his being appointed, in 1781, to a high situation in the Chamber of Commerce. Shortly afterwards he married, and, in order to increase his income, set up the "Handelsstidende," or "Commercial Journal," which he first

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carried on in conjunction with Cramer and Elchart, and afterwards by himself, but gave it up at the end of five years, when the publication itself fell into neglect.

From that time he devoted himself, as far as his official duties permitted, to literature, and had indeed already signalled himself in it by his 'Stierkodder,' which appeared in 1785, and the success of which most probably induced him to publish his 'Narkomik,' or minor chronicle in verse, as its author modestly styles it, being a romantic narrative founded upon the traditions of northern legend and mythology, and recording the hero Stierkodder's adventures. In 1791, he issued 'Skirra,' or a Rhinoulik, or minor chronicle in verse, and employ his pen more congenially with his own feelings.

This poem was then altogether a novelty in Danish literature, and though it does not answer to the character of an epic, it was sufficiently well received, and was translated into Swedish by a certain Mr. Kristoffersen, and into Dutch by E. van Beuningen, who published it in 1792, and employed his pen more congenially with his own feelings.

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and often accompanied by a very small white line. The band too is often only indicated by small black spots. (Tomm.)

Young.—Upper parts brown ash clouded with deeper undulations and whitishe borders; throat tarnished brown surrounded with brown spots, disposed so as to replace the band which surrounds this part in the old bird; breast and belly deep grey with brown spots, but sometimes without spots; the tail less forked, and the lateral feather much shorter than in the old.

In this state it appears to be La Perdrix de Mer à Collier, la grise, la brune, et la Giarole de Sonnini (Buff.); La Perdrix de Mer des Maldives, de Comorundel, et de Madras, of Sonnerat; Das braunrigraue Sandhuhn und Geflechte Sandhuhn of Bechstein; and collared ual further varieties of Pratincole of Latham.

Food, Habits, Geographical Distribution, &c.—The genus Glareola,' says Mr. Gould, in his great work on the Birds of Europe, 'appears to be strictly confined to the old world, no Transantarctic example having ever been discovered, nor indeed are we aware of any form in the ornithology of America which at all approaches the present. Three species are all that are as yet discovered. Of these, two (the G. grallaria and the G. lactea) are peculiar to the eastern provinces of Asia and Africa; the other, the bird now before us (G. torquata), is spread throughout the warm and temperate regions not only of these continents, but Europe also: hence it would seem as if nature endeavoured to make up by extent of habitat for the limitation of species. Still however, although thus diffused, the Pratincole may be said to be truly a native of the eastern provinces of Europe on the Asiatic borders, and especially Hungary, where wide tracts of morass and flat lands, abounding in lakes both fresh and saline, and traversed by mighty rivers, afford it food and security. "In Hungary," says M. Temminck, "among the immense morasses of the lakes Neusiedal and Balaton, I have been in the midst of many hundreds of these birds;" and we might add that it is no less abundant in Western Tartary. In England it is only an occasional visitor; but in Germany, France, and Italy, it is a bird of periodical occurrence.'

M. Temminck, in the last part of his Manuel, states that it breeds in Sardinia, and that it is very abundant in Dalmatia, on the borders of the lake Boccanaro, on its spring passage. The eggs he describes as being yellowish white. 'With the long wings and forked tail of the swallow,' we again quote Mr. Gould, 'the Pratincole possesses that rapidity and power of flight for which the bird is so remarkable. It takes its food, which consists of insects, and especially such as frequent marshes and the borders of rivers, while on the wing, darting along in the chase with the rapidity of an arrow; nor is it less distinguishable for celebity on the ground, and often catches its prey in normally runs along. This elegant and graceful bird incubates in the concealment afforded by reeds, osiers, and tall herbage, laying three or four white eggs.'

Neorachus, and he was one of the last of his family who acquired any reputation as a physician. His most celebrated pupil was Herophilus (Galen, De Different. Puls., lib. iv., cap. 3), and he himself was famous for his skill in anatomy and physiology. The titles of several of his works are preserved, but only a few fragments of them remain, together with some of his opinions on medical subjects recorded by Galen and others. He was the first person who pointed out the distinction between the veins and arteries, and affirmed that it is only in the latter that any pulsation is felt, although he believed them to be filled with air (Galen, De Dignosc. Puls., lib. iv., cap. 2), and he accordingly made use of emetics, whereby the wounds are atoned by attributing it to an unwholesome state, in which the wounded arteries attract to themselves the blood from all the neighbouring parts. He supposed that the heart gave birth to the lightest of the blood, and that the latter are ultimately converted into nerves (or ligaments) as they contract in diameter. (Galen, De Hippocr. et Plat., Decret., lib. i., cap. 6.) The brain he supposed to be of no particular use, but merely an expansion of the spinal marrow. His anatomical skill and observations made him introduce several improvements into the theory and practice of medicine; for example, he declared that the pulse indicates the variations of the strength of the disease, a discovery which threw new light on the art of medicine. He was the first to point out the uses of emetics, he introduced the use of emetics, he introduced the use of emetics, and he recommended the use of emetics (De Morb. Acut., lib. iii., cap. 17). In cases of lice he recommended emetics, as several modern practitioners have also done; and when attended with introduction, he ventured to replace in part the inordinate use of emetics. His views as to the use of emetics, his views as to the use of emetics, and the extent to which he employed them are well known, and they have been quoted by various authors, as well as by the testimony of some of his works and by the received dates of artists who are classed as his contemporaries. Pliny (Hist. Nat., xxxiv. 8) says Praxiteles flourished in the hundred and twenty-third Olympiad, or near by, and that there was a celebrated statue and painter. Pausanias (viii. 9) says Praxiteles lived three generations after Alcamenes. He must therefore, according to these statements, be placed at about 360 B.C., or if as some antiquaries have contended, he executed a work so late as the hundred and twenty-third Olympiad, or 284 B.C., he may have begun his career as an artist rather later than the time mentioned. It is however quite possible, supposing he lived to an extreme old age, that Praxiteles was practising as a sculptor at the periods recorded, although they include a range of seventy-six years. Praxiteles was eminent for his works both in bronze and marble, but he seems to have had the highest reputation for his skill in the latter. 'Praxiteles made marble Felix, marble Clarion fuit;' and again, 'Praxiteles atatem inter statuarius diximus qui marmoris gloria superbavit etiam semitter.' (Plin., Hist. Nat., xxxiv. 3, andxxxv. 3.) Pliny and Pausanias enumerate a long list of the productions of Praxiteles. Amongst those in bronze, which appear by the concurrent testimony of antique writers to have been held in the highest estimation, were a statue of Bacchus and another of a satyr, so excellent that it was called by way of distinction Peribolos (the celebrate Peribolos of Antioch), and it was also made by him, and was afterwards destroyed by fire; likewise a statue of a youthful Apollo, called Sauroctonus, or the lizard-killer, as he is represented in the act of killing a lizard. Two statues of women are also said to have been represented a matron weeping, the other a courtesan laughing. The latter was much admired for its expression. It was believed to be a portrait of the celebrated Theban courtesan Pryne. Of these works and several others in the same
material, the only record that remains is an undoubtedly antient copy, in marble, of the Apollo Saurontes. It is too well known to require a particular description in this place. Though defective in some trifling respects of detail, it is not difficult to judge from it of the purity of style, and grace and beauty of form, which may have characterized the sculptured art of the highest period. We may well consider it one of the greatest treasures of the Vatican. Among the works in marble by Praxiteles, the famous Venus of Cnidus must undoubtedly be placed in the first rank. We are told that two statues of Venus exist; one draped, the other entirely naked. The people of Cos preferred the first; the Cnidians immediately purchased the latter. The fame of this statue was so great that travellers visited Cnidus solely for the purpose of seeing the Venus. Nicias, one of the admirers of Bithynian was so desirous to possess it, that he offered to pay off a heavy debt for them if the Cnidians would consent to give up this celebrated work. The tempting offer was, to the honour of the people of Cnidus, declined. Praxiteles, observes Pliny, 'illo enim signo nobilitavit Cnidum.' There were doubtless many copies of so celebrated a work, and the representation of a figure of Venus on the coins of Cnidus affords unquestionable authority at least for the action and general character of the celebrated statue. Cnidus is mentioned by Lucian as the finest of the works of Praxiteles (Eikónwv, c. 4), and from the description in another passage (Euphr., c. 13, &c.) we may form some notion of the celebrated statue of the goddess. Praxiteles also is supposed to have executed many epigrams in the Greek Anthology. The original work fell a prey to the flames, at Constantiopolis, in the fifth century, in the dreadful fire which destroyed so many other fine monuments of art collected in that city. The loss of the Venus of Cnidus may justly be considered among the greatest which art has sustained; for no production in antient sculpture, with the single exception of the Olympian Jupiter of Phidias, has received such universal and such unequaled admiration. Two statues of Cupids are also mentioned among the most esteemed works of this master. One of these was so beautiful that it was placed by Pliny quite on an equality with the famous Venus of Cnidus. It is thought that a copy of it exists in the collection of sculpture in the Vatican. An anecdote connected with this statue will not be misplaced here. It is recorded, with some slight variation, by more than one antient writer, and it is interesting to us, if founded on fact, it tends to confirm, by the artist's own judgment, the high opinions which have been given of two of the most remarkable of his productions; and if it is not authentic as regards the principal actors, it at least shows how much the existing antient copies had been alluded to. Phryne, whose influence over the sculptor seems to have been considerable, anxious to possess a work of Praxiteles, and not knowing, when she was desired to choose one of his works, instead of selecting one of the favoured statues, she devised the following expedient. She commanded a servant to hasten to him and tell him that his workshop was in flames, and that with few exceptions his works had already perished. Praxiteles, not doubting the truth of the announcement, rushed out in the greatest alarm and anxiety, explaining 'all was lost if his Satyr and Cupid were not saved.' The object of Phryne was answered; she confessed her stratagem, and immediately chose the Cupid. (Pausanias, i., 20.) Annum other works that have been thought worthy to be recorded were two statues of Phryne: one was of marble, and was placed in the temple of Venus at Theopist, the native place of the courtesan; the other was of alabaster; and was dedicated by her at Delphi, where it had the honour of a distinguished place. Praxiteles appears also to have executed works of a more extensive character and composition. The chief of these were two groups that decorated the pediments of the temple of Hercules at Thebes. (Pausan. vi., 9.) They represented part of the labours of Hercules.

The style of the school of which Praxiteles may be considered the founder was softness, delicacy, and high finish. We refer the reader to the productions of this great and original man. Their general character, such as distinguished the art which immediately preceded his era under Myron, Phidias, and Polycletus; whose genius led them to represent the more exalted and many-sided character of the antient deity, as Jupiter, Juno, and Minerva, or the classic forms of heroes, that of the gods and athletes. Praxiteles, on the other hand, seems to have been attracted by, and to have devoted himself to, the lovely, the tender, and the expressive. Beyond this he appears to have wished great the execution, and to have had some peculiarities in the mode of finishing his marble. He is said to have declared that he considered those to be his best works which had undergone the process of 'circumduction' by Nicias. From the circumstance of Nicias being a painter, it is not surprising that he should have simply mean polishing and rubbing, but that some varnish or encasia was laid over the surface of the marble after it had left the sculptor's hands, in order to give it a rich softness, such as in reality this was. For the surface of marble, call the 'morbidezza di carne.' Modern ingenuity has vainly endeavoured to discover the process alluded to. It was in all probability a wash of some sort; perhaps a preparation of lead and water, or of egg and wine. (If the latter, either the preparation or the statue being warmed to a certain temperature, there are now no certain means of judging. From some experiments that have been made, and the close resemblance produced to some portions of the surface of antient marble, it seems probable that the latter mode of operation approximates in some degree to the antient process.

Praxiteles had two sons, Timarchus and Cephisodotus or Cephisodotides (both, as Pliny tells us, were artists). Pliny says of the latter, 'Praxitelis filius Cephisodotis rei et artis erubes fuit.'

There was another artist called Praxiteles living at a later period, who was a modeller and chaser. There was also a painter of the same name, mentioned by Pliny (Hist. Nat., xxxv. 11).

PRAYA. [Aзовск.] PRAYER, a term in theology, used to designate the intercourse between the human minds and the divine. Language appears not to be necessary to complete the idea which the word represents, since we speak of mental prayer, which is thought directed heaven-wise in adoration or in entreaty without the sentiment of the mind being embodied in words or finding expression by the lips. But its far more common use is to express this kind of intercourse when the sentiment of the mind is embodied in language.

It is a derivative of the verb to pray, which signifies to ask for something and the intercourse in which we have spoken is described by a word which etymologically describes only one part or section of the whole idea, inasmuch as in such intercourse the principal object will always be the supplication of those rich communications of good which God can bestow and man receive.

Prayer springs immediately out of the persuasion that man is not placed on this globe without a protecting and sustaining power over him, which power is conceived to belong to the One Great, Good, and Wise Being, who was the Creator at first of man himself, and of all the things by which he is surrounded, or which touch in any way his condition. Wherever this idea is fully formed, it seems that the mind is instinctively at least to ask supplication to entreat that the Power, which can do so much for it, would be pleased to exert itself. Whether this government and this ability be vested in one being, or be supposed to be distributed among many, either equal in power, or supreme and subordinate, the case is the same. Circumstances arise in which it seems that it would be impossible to withhold the mind from assuming the form of supplication and the lips from expressing the desires which have sprung in the mind. We accordingly find that prayer has existed from the earliest times when we find men raised into the rank of religious beings, and in any state of religious knowledge, however rude and mistaken the ideas may have been; in times of danger and calamity at least, men have thrown themselves prostrate before a superior power, and entreated its interposition.

Sometimes the prayer may be no more than a brief ejaculation; but if arising in the sincerity of the heart, it is not the less prayer, nor the less regarded by Him who is described in the Holy Scriptures as the God that heareth prayer.

But even in some of the earliest monuments of human thought and feeling we have prayer that has not been mere ejaculation, or even the mere expression of feeling excited by temporary emergencies: and there are come down to us various prayers used by good men in antient times expres- sing the sentiments of daily intercourse with heaven; and other topics may properly be introduced and mingled with supplication. There are prayers of men who not the
light of either of the divine dispensations, and there are wise
directions concerning prayer in the writings of such men;
but the Old Testament contain many prayers, and many hints and observations
respecting prayer, all of which are very instructive, and held
in devout reverrence by those who receive the persons whose
words are recorded in the examples.
From these examples, and from the instructions inordin-
tedly given, Christian divines have deduced certain princi-
ples respecting prayer. They have in fact raised a kind of
system of prayer; dividing and subdividing the several
branches of it. Of these it is usual to say that a prayer, or a
body of words expressive of the intercourse, should contain (1) expressions of adoration and admiration of the Mighty Being who is the object of address, by which the
worshipper signifieth forth the majesty and power of God,
and thereby grants that which we entreat of him: (2) expressions of our
own unworthiness to receive more blessings than he has al-
ready seen proper to bestow upon us; either on account of
a general principle of divinity, or of some particular sin of
which we have been guilty. This is thought to be in ac-
cordance with the actual state of every one who thus puts
himself as it were more immediately in the awful presence
of his governor and judge, and to be also salutary to the
suppliant, inasmuch as it irritates to humility, and a disposition to acquiesce in whatever may be the divine will.
(3) Then comes the supplantatory part, in which general or
particular blessings are besought, suitable either to the
genres of divine action relative to religious and civil
affairs; but also to the particular circumstances of the moment. (4) Intercession for others, the
entreaty of the divine favour for the whole human race,
and such blessings as particular classes of persons pecu-
liarily need. Each of these points is considered, and
thus necessary for the spiritual welfare of man, the
mind and charitable feelings, and leading each individual
man to feel himself as one of a great family of whom
God is the common head and the common protector, and
whose interests are not to be disregarded in attention to
the wants and wishes of an individual member of it. (2) Lastly
comes thanksgiving, a devout acknowledgement of past and
present mercies, the good which God has given in his natural
 providence in general, or any special good which he may
have bestowed upon us. Such thanksgiving in Christian
divines, ought to be the form into which men's thoughts cast themselves
when they enter into communion with God: and the various
prayers which are delivered in public by the ministers of
religion in behalf of multitudes praying together, are for the
most part constructed in this form, the differences arising
(1) from the selection of different subsidiary topics under
each, and (2) from the greater length in which each of
these subjects is entered into, according to the feeling or the
notion and intention of the individual minister; and
such also are the prayers for the most part in those collec-
tions of prayers many of which are printed for the use of
persons, either in their private or family devotions, who find a
different form to the words here given more suitable for the hour.

Liturgies are of the nature of printed collections of
prayers. They are guides to the mode in which the prayers
of many assembled in Christian congregations shall be
offered. The Book of Common Prayer contains the Liturgy
of the English Church as appointed by authority. The
effect of liturgies in public worship is to restrain the mani-
festation of peculiarities in the notions of particular ministers
respecting the nature and subjects of prayer: to keep out of
the public assemblies of Christians extravagancy and en-
thusiasm: to bear the will of the community at large to bear
on the wills of single ministers in respect of the devotional part
of public worship; and to make known beforehand to the
people what sentiments will be expressed, and in what form
of words, in the service in which they are about to engage.

PREACHING. [Oratory.]
PREBEND (prebenda, from prebeo, a Low Latin word
signifying provision, or the receipt of which the
member of a cathedral, or collegiate church, called a pre-
 bendary [PREBENDARY], received in right of his place for
his maintenance. It was named from the place whence
the profit proceeded, which was either from some temporal
land or church, if the prebend, or else from the church, or
from either, all the revenues which were appropriated towards
the maintenance of the member of the cathedral or collegiate
church. Prebends were of two kinds, simple and dignitary.
The latter is to be dignitary, one to which a jurisdic-
tion was annexed; a prebendary holding the latter was styled
a dignitary. Some prebends were donative, others in the gift
of laymen, who, in case of vacancy, must have presented
the future prebendary to the bishop. None of the prebends
was till 1277 subject to the ordinary, and the bishop
situated him, and the dean and chapter then inducted and
planted him in a stall in the church. If a bishop were
the patron, he collated. At Westminster the king collated by
a pension, by virtue of which the prebendary took possession
without institution or induction. The bishop's relation to
the patron is thus described: "To compel an election to fill a vacancy. During a vacancy the
profits belonging to a prebendary as sole corporator went to
his successor; those which he held as member of the cor-
porate body being divided among the dean and chap-
ter. A prebend, being a benefice without cure of souls,
was not formerly incompatible to be held with a parochial
benefice, but one prebendary could not possess two prebends
in the same church, though by misunderstanding in an c. 239 it
now, by 1 & 2 Vic., c. 166, no spiritual person holding more
benefices with cure of souls than one shall hold any cather-
dal prebendary; or, holding any cathedral prebendary
and any benefice with cure of souls, shall hold any other
cathedral prebendary; or, holding any prebendary in
any cathedral or collegiate church, shall hold any prebendary
in any other. (Comyn's Digest, tit. 'Prebend'; Burns, E. L.,
68, 98; Rogers, On Ecclesiastical Law, tit. 'Dean and Chap-
ters.' )

By the 3 & 4 Vic., c. 113, founded on the Report of
Commissioners appointed to consider the state of the church
with reference to its revenues, very important changes are
now suggested. It is proposed that the revenue and
interests of all cathedrals and collegiate churches, as to number of canons, are to be placed
upon the following footing:

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All bishops are authorised to confer honorary canonicries,
without emolument, to the number of twenty-four in each
cathedral church.

No canon is, by virtue of his canonry, for the future to
possess any separate estate or income, all of which are to
vest in the Ecclesiastical Commissioners appointed by 6 & 7
Vic. IV., c. 77. The profits of the suspended canopies
are to be paid to the commissioners, in whom their estates,
as well as those of non-residentiary prebendaries, &c., are
to vest. The dean of Durham is to receive an average an-
nual income of 3000l.; the deans of St. Paul's and West-
minster, and the warden of Manchester, of 2000l. each.
The canons of each of those churches, 1000l. The dean of every
other cathedral or collegiate church in England, an income
of 1000l.; of St. David's and Llandaff, 700l. The canons of
every other cathedral church in England are to have 500l.;
of St. David's and Llandaff, 350l. The separate patronage
of members of chapters is to be vested in the respective
bishops. Provisions are made as to the exercise of the
patronage of chapters. And it is made unlawful for any
spiritual person to sell or assign any patronage or present-
ation belonging to him by right of his office. The minor
canons are to be appointed by the chapter.

PREBENDARY ("Prebendarius"), one who has a pre-
bend (prebenda), an canon endowed with a stall or an advo-
cate or title. In right of his prebend, he possessed an
estate. He was bound by canon 42 to reside four score and
ten days during each year in the church to which he
belonged. The revenue, which was ascribed to its support;
prebend with dignity, one to which a jurisdic-
tion was annexed; a prebendary holding the latter was styled

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the dean, forms a corporation aggregate, called the dean and chapter, having a distinct estate, is, by virtue of that, a sole corporator, and therefore a member of the corporation aggregate. The office of the dean and chapter is to consent to the grants, leases, &c. of the bishop. Antiently they formed his council, as they still do nominally. On this head is the beginning of the long-sustained controversy, in which a cong'd e'elre is issued. During the vacancy, they govern the diocese and guard the spiritualities of it, unless where the archbishop has that right by prescription. Prebendaries were bound by canon 43 next in their churches, and in other churches in the diocese, especially to those whose their proceeds, or to substitute other preachers approved by the bishop. A prebendary could not make a grant, &c. after installation and induction. [Dean: Com. Philoxenis &c.].

PRECEDENCE, one of the artificial distinctions among men living in a state of political society. In all countries the great mass of mankind will be of one, no individual possessing political privileges which do not belong to the rest, except as pertaining to some particular employment in the various ordinary businesses of life in which each individual engages. But these give no precedence of one before another; all move on abreast. But above these are certain persons, such as the members of the liberal professions, persons who hold or have held offices in the state, peers, who take precedence of the rest, and who are allowed to act by any law as promulgated, yet by the constant usages of society. And again, the individuals, who may form perhaps the thousandth part of the whole community, who possess this privilege of precedence, have to be admitted to the other regulated according to usage, or, in other words, by the precedents established in records of former arrangements. The subject is one to which a good deal of attention has been paid, and it is now only as incident to the creation of new courts or officers, or in singular points of the royal family, that difficulties arise. The members of the College of Arms, who are the council of the eurl-marshall of England, are usually referred to in questions of precedence; and to them is assigned the arrangement of public processions at royal marriages, funerals, coronations, and the like, when it is that questions of this kind come to be considered.

Tables of precedence may be seen in many books, and especially in those called peerages.

Sometimes the question arises among ambassadors who shall enter a room or depart before another, and great tenacity has at times been manifested in supporting the claims to rank from the state or kingdom represented. In the Philoxenis's Sin of Sinners, it is stated that they are almost insuperable struggles for precedence by ambassadors of the state of Venice in the reign of James II.

PRECESSION AND NUTATION, the abbreviated way of expressing the precession of the equinoxes and the nutation of the earth's axis. These phenomena should always be considered in connection with the rotation of the earth, of which they really form a part; that is to say, diurnal rotation, procession, and nutation are the motions of the earth about its centre, independently of the motion of that centre along its orbit round the sun. It will assist our comprehension of the subject to suppose the earth's centre a fixed point, the relative motions of the heavenly bodies being adjusted accordingly. [Motion.]

The rotation of the earth round its axis is visible from hour to hour by the change of place in the stars: the precession and nutation are motions of procession, and nature to be rendered visible, and indeed could hardly be made so unless the ecliptic and equator were visible circles. If such were the case, and if the motions were large enough, the equinoxes, or rather the equinoctial points, would appear to change place, the equator moving slowly round the ecliptic with a retrograde motion, that is, contrary to the annual course of the sun. The equinoxes would appear to move on the horizon, sometimes a little faster and sometimes a little slower than the mean motion. At the same time the equator would appear to swing backwards and forwards to and from the ecliptic, turning upon the equinoxes as on an axis. Any average motion of the equinoxes upon the ecliptic is the precession; the alternate acceleration and retardation is one part of the nutation; and the alternate increase and diminution of the angle contained between the two is the other part. It is however common to call the acceleration and retardation of the motion of the equinoxes by the name of the equation of the equinoxes, and to reserve the name of nutation for the motion of the pole which corresponds to it.

Fig. 1.

Let C be the centre of the earth, CP half its axis, P the north pole, and ASB half of the equator. Let MN be part of the plane of the ecliptic, and CQ a line perpendicular to the point of intersection of the plane of the equator to the pole of the ecliptic, and let the direction of the diurnal rotation be that of the arrow marked on the equator. If then P were carried uniformly round a circle perpendicular to CQ, so that CP should describe a conical surface, a would be carried round in a direction contrary to that of the diurnal motion, and with them the equator BSA, the angle which the equator makes with the ecliptic remaining unaltered. This circle of B and A is the precession. But suppose that instead of P being placed on the circle, it is placed on the circumference of a small oval, which has its centre on the circle. While in the centre of the oval moves forward on the circle with the motion of precession, let the line P move round the oval with a motion exactly opposite to that of the precession. It will then trace out in space an undulating curve, as shown in the principal diagram, and the effect will be an alternate retardation and acceleration of the motion of the equinoxes along the plane of the ecliptic, together with a vibration of the plane of the equator to and from the ecliptic; which are the motions described as constituting the nutation.

The preceding is a description of the effect of any one of the heavenly bodies, theoretically speaking, upon the axis of the earth. The whole precession and nutation is the united effect of the sun, moon, and planets. The effect of the planets however is insensible, except in a slight annual alteration of the plane of the ecliptic, which is mixed up with the precession, and makes it appear a very little smaller than it would be if the system of the sun, moon, and earth were undisturbed by the planetary attraction. The general reader need only attend to the main phenomenon, namely, that the equinox (the point of the heavens at which the sun is at the commencement of spring) moves slowly backwards along the ecliptic, at the rate of 50 seconds per annum, or about 14° in one thousand years. This rate of motion is subject to a very slow increase, which is not perhaps sufficiently well determined to make it worth while to compute exactly the time in which the equinox describes the whole heavens, or the period of between twenty-five and twenty-six thousand years.

A good notion of precession may be got from observing the spinning of a top. As long as the axis of the top is not vertical, this axis itself revolves, but much more slowly than the top revolves round its axis; the equinoxes B and A would move round the oval with a motion exactly opposite to that of the precession; this will give a complete notion of the phenomena of precession and nutation.

Before proceeding to the mathematical and physical description of these phenomena, we shall show the manner in which they may have an historical and chronological importance. Let the reader take a globe and he will see that the ecliptic crosses the equator under the

\[ \text{It will perhaps be more intelligible to imagine all the stars moving slowly forwards in parallel to the ecliptic, the equator remaining unchanged.} \]
tail of one of the Fishes, so that the vernal equinox is nearly in a line with the stars θ Andromedae and γ Pegasi (Alphorat and Algenib). These stars then are invisible at the beginning of the spring, being in the region of the heavens nearest to the sun. Let from twelve to thirteen thousand years elapsed, and the slow precessional motion of the equinoctial points will reverse the positions of the equinoxes, so that the above-named stars will be near the meridian at midnight at the commencement of spring, as the stars in the head of Virgo now. An Aztec of our day would celebrate the brightness of Virgo in the nights of spring, while one of thirteen thousand years hence must choose Places for that purpose. The seasons of the year at which different stars shine brightly depends on the sun’s distance, and in the latter part of the chronology.

It took him twenty years of observation, somewhat more than the whole period of the change, to detect the law of the anomaly whose existence he became sensible of in 1742. After his discovery had cleared away the largest part of the then unexplained motions of the stars, the discovery was completed and published at the end of 1747. In 1749 appeared the Résumé of D’Alembert’s in the "Préces," of the general explanation of the subject, and had even foretold, without assigning magnitudes, the existence of those terms of nutation which depend upon twice the true longitudes of the sun and moon; but the most important terms, those depending on the moon’s node, appear to have been altogether unsuspected by him.

We now come to such a physical explanation of the cause of precession and nutation as can be given without mathematical analysis. On looking at the motion of the equator arising from precession and nutation, we see that it precisely resembles in character some of the alterations which take place in a planet’s orbit, the precession answering to the regression of the nodes, the equation of the equinoxes to the variation of that regression, and the remaining part of the nutation, or the variation of the obliquity, to the inclination of the ecliptic to the celestial equator. The whole of the above-named effects, thus far, is to be considered as the effect arising from an unexplained disturbing force on the moon.

Thus, explains, firstly, the precession; secondly, that part of the nutation of the inclination which depends upon twice the longitude of the disturbing body. This explanation (prop. 66, corollaries 18-22) is substantiated as follows:—

If a sphere in rotation be attracted by another body, the axis of rotation must remain unaltered: for since a plane drawn through any attracting point and the centre of the attracting sphere cuts the sphere into two perfectly similar halves, there is no effect upon the rotation (or tendency to an effect) arising from the attraction upon one half of the sphere which is not destroyed by the tendency to the exactly opposite effect arising from the attraction upon the other half. If the earth were a perfect sphere, whatever motion of translation the whole sphere might receive, the axis would always remain parallel to its first position, and there would be neither precession nor nutation. Again, if the earth were considered as a point at the equator, as is here assumed, and let an attracting point be situated in the plane of the equator; the symmetry just alluded to still exists, and the result is the same. But if an attracting point be not situated in the plane of the equator, the plane passing through the attracting point and the centre divides the spheroid into parts which, though equal, are no longer similarly situated with respect to the attracting point. The alteration of the axis which would take place if one half only were attracted, is no longer counterbalanced by the attraction on the other half: the direction of the axis is therefore continually changed.

![Fig. 2](image-url)

To get a specific idea of the nature of the change, first suppose the substantial part of the earth only to exist, the protuberance being removed; and the solidity of the sphere still remaining, let all its matter be supposed, to be removed to the centre at C (Fig. 2). The diagram shows the sphere of the earth, divided down the line of the protuberance; the solid part of both parts is supposed to remain, but the matter of the internal sphere is removed to
C, that of the protuberant part is not yet introduced: M is the attracting body, and the plane of its orbit is given, while the directions of the earth's rotation and of M's orbital motion are denoted by arrows. At present M produces no effect on the rotation; now let a small mass of matter be put into an orbit as shown, and suppose it to move round the mass C in and with the equator. The consequence will be that all the other masses or the planet will wobble in the direction of its own axis, while the inclination of the orbit will alternately increase and diminish, being greatest when the line C M passes through one of the equinoxxes. If we put such satellites all round the equator, the effect will not be altered in quality, but increased, and, when the whole of the parts of the sphere, the effect will still be of the same sort, though further increased in magnitude. The effect of the parts of the protuberance nearer to the pole is, for a given mass, less than that of the parts near the equator. Finally, if we restore the mass of the internal sphere to its proper place, the effect will be less than before; for since no motion of the protuberant part can take place without one of the whole sphere, and since rotation is more difficult to produce, the greater the distance of the masses moved from the axis, the distribution of the mass C over all parts of the sphere will render M less efficient in the alteration of the direction of the axis. Thus it appears that the phenomena of precession and nutation are due to the protuberant part of the sphere as a fixed satellite to the internal part; but the proof that the precession and nutation do so arise consists in taking a strict mathematical process, investigating them, and nutating the whole sphere, and showing that the results agree with those of observation. But, as before noticed, the largest part of the nutation depends, not on the place of the moon in its orbit, but on the position of the orbit, that is, on the node of the orbit. Supposing the moon's orbit circular, imagine the mass of the moon to be distributed in a ring all round its orbit. If this ring were simply to revolve in the same plane, the effect produced by it in the earth, though materially altered in quantity, would be of the same sort as before, and in both cases very small. But suppose the ring to shift its position, as does the moon's orbit, its nodes slowly regressing at the rate of a revolution in eighteen years. This shifting of the position of the ring will of course produce an alteration in the phenomena, and the substitution of the moon revolving in a shifting orbit in place of this ring. That the change of the character of the orbit should be greater than that of the planet itself in a fixed orbit ought not to be surprising, since there is no prior reason why it should be either greater or less. Throughout the solar system there is no action of one planet on another without a corresponding action of the second upon the first. The protuberance of the earth, by which the planets produce precession and nutation, attracts those planets, and slightly varies their motion. In the case of the moon, sensible irregularities, both in longitude and latitude, amounting at the maximum to about 7° in each, were found by Mayer, before Laplace showed them to be the consequences of the earth's protuberance. These inequalities may be made the means of calculating the amount of that protuberance, or, as it is technically called, the ellipticity of the earth: and it is a fact not a little remarkable, that the amount of this ellipticity, as calculated from its effect upon the moon's longitude, agrees with the same, as calculated from its effects upon the courses of the other inferior planets. The earth generally agrees with one another, while both agree nearly with the best of the latter. This sort of result had been anticipated as to quality by Newton, who showed that the motion of the equinoxes, being retrograde, proves the earth to be protuberant at the equator, and that if it had been protuberant at the poles (as many then thought was the case), the precession would have been in the contrary direction. But the objection holds against the modified form of the doctrine of precession, which is called preterition, namely, that God decreed to some only, out of the whole human race, to be saved; it is replied, that all deserve damnation; and therefore while it is an act of sovereign mercy to save some, it is an act of strict justice to leave the rest to perish. The greatest difficulty in this doctrine is the supposition, maintained equally by Calvin and the Anti-Calvinists, that election and reprobation are inseparable: that if God has destined some to eternal happiness, it follows as a necessary consequence, that he has destined the rest of our race to eternal damnation. This consequence is denied by the modern Calvinists. 'It takes for granted,' says Dr. Williams, 'that what cannot be proved, the non-elect, is destined to an decree. Non-election is a negative idea, not electing; but to decree a negation is as absurd as to decree nothing, or to decree not to decree. The notion of decreeing to permit evil involves a contradiction in terms. If there be not a decree to be not to be, there is not to be, and the negation of the decree must be a negative, and so forth.' This objection holds against the modified form of the doctrine of predestination, which is called preterition, namely, that God decreed to some and pass by the others. It should be carefully observed, that the doctrine of election includes no idea of any who are seeking after salvation being denied, repulsed, or hindered. Another objection to the doctrine of predestination is, that it makes God the author of sin; but this is no objection to the divine decree. This again the modern Calvinists deny. They maintain that the limitation of man's powers is not the result of a decree, but a quality which, by the nature of things, is inherent to every
created being; and that therefore the defects, and among the others, the sinful defects, which are the consequences of this limitation, do not result from a divine decree.

To the objection that predetermination is inconsistent with free will, Porphyry said, "A free will must be determined by some cause, either efficient or deficient; and that God foreknows the deficiencies which are the causes of all the evil determinations of the human will, while all the good determinations proceed from himself, as the source of all good.

(Dr. Williams’s Defence of Modern Calvinism, and Essay on the Equity of the Divine Government and the Sovereignty of Divine Grace; Dr. Payne’s Lectures on Divine Sovereignty, etc.)

Predicables. The term predicable (καταγραφέω, predicabile) is applied in logic to general names, considered as capable of being the predicates of propositions. [On Predication, see Okganom, p. 3.] The classes of predicables usually recognised by logicians are five, viz., 1. Genus; 2. Species; 3. Differentia; 4. Proprium; 5. Accidents, which Latin names are translated from the Greek, i.e., γένος; 2, ζώδια; 3, ἄθροισμα; 4, ἄλλα; 5, ἔσχατος.

The five-fold classification of the predicables does not occur in Aristotle’s ‘Organon,’ or any of his other extant writings, and it probably did not occur in any of his lost writings. The word γένος is often used by Aristotle to signify a class: we should therefore expect any use of the word ζώδια in the sense of a logical species in his writings. In his ‘Nicomachean Ethics,’ b. i., c. 4, he applies the word ζώδια to the ideas (or supposed archetypal forms of general notions), and in each of the remaining books γένος (or καταγραφή) is often used by Aristotle to signify that which is contingent or accidental, in opposition to that which is necessary (πραγματεύον).

The earliest work in which the received classification of the predicables occurs, is an ‘Introduction to Aristotle’s Categories,’ written by Porphyry of Tyre, the well-known heathen philosopher of the third century (born 233 a.d.) and many of whose extant works are contained in Bekker’s ‘Aristotle,’ vol. ii., p. 1-6; see also the other excerpts to p. 21.) Porphyry states, at the outset of this treatise, that a knowledge of the five predicables is necessary for the proper explanation of Aristotle’s work on the categories; and he therefore addresses a certain Chrysaurus a popular account of them, derived from the antient philosophers, especially the Peripatetics. (Concerning Chrysaurus, see David, ib., p. 18, b. 16.) The five predicables (τα ἄντικα γένη, as they were originally called) are not contained in Bekker’s ‘Aristotle,’ on the categories, as is incorrectly stated in Hermeias, ib., p. 10, b. 14; and it is probable that the ‘antient philosophers’ alluded to by Porphyry were of consideration. Aristotle and his school substituted for Porphyry’s treatise on the predicables, by Michael Psellus, of Constantinople, who lived in the eleventh century, has also been preserved; and it is reprinted in the beginning of the small Oxford edition of ‘Excerpts from Aristotle’s Organon’ (Clarendon press, 1892). Concerning Michael Psellus, see Allatius ‘De Psellis,’ in Fabric. ‘Bibl. Gr.’, vol. v.

From this treatise the classification and explanation of the predicables have passed into the various treatises of the Aristotelian logic, and have been repeated in them with various variations and developments, but with little substantial change, up to the present day. (Whately’s Logic, part i.)

It appears to us that the explanation of the predicables which we have in our treatise is more suited to the modern logic; that is to say, it implies that there is something in nature, besides individual things, corresponding with general notions. We shall therefore lie by the reader a brief account of the modern view. It is conformed by the following.

Logic teaches us that all objects of the intellect are divided into two classes, which are called the species and the genera. The name of any supposed class may be called the species; for example, man.

The name of any class including this class may be called a genus, with reference to the species; for example, animal, with reference to man.

The two preceding heads of predicables are names of classes; the remaining three are names of attributes or qualities.

Differentia is the name of any attribute which belongs universally to the species, and to it alone. For example, the power of ameliorating his condition in successive generations, and the power of using language, as belonging to man. A logical definition is composed of the genus and the differentia.

(Proprium, the name of any attribute which belongs universally to the species, but not to it alone. For example, sensation, the power of articulate speech, or memory, as belonging to man.

Accident is the name of any attribute which may or may not belong to the individual of the species. For example, the colour of the skin in man.

There being nothing external which corresponds to general notions, the principles by which classes may be formed may be chosen at pleasure, according to the purpose which the classifier has in view. On this subject, see further in Abstraction and Genus.

The introduction of the theory of realism into the received explanation of predicables appears to have arisen from an identification of genus and species with matter and form.

It was thought that the material or essential substratum, or the substance of a thing (that part which, according to the definition of the substratum, is essential to the essence of the thing, or non-limited, non-essential, non-accident), was the genus; and that the outward form or appearance is the species. See a distinct statement to this effect in Porphyry, p. 3, b. 38, ed. Bekker. It is to be understood that the term ‘form’ is thus applied in all species of substances, both Latin to signify both logical species and form (ζώδια, species).

(On the predicables, see some remarks in an article in the Westminster Review, No. 17; and a pamphlet, published at Oxford in 1829, entitled An Examination of some Passages in Dr. Whately’s Elements of Logic.)

Predicaments, or Categories, are certain heads of general notions, or qualities, and it is, which is contained in a treatise by Aristotle which stands first in the extant series of his logical writings. (Okganom, p. 9.) The following are the predicaments, or categories, as classified by Aristotle:—1, substance (στις); 2, quantity (τά ποιητική); 3, relation (τά συνθέσια); 4, quality (καταγραφή); 5, opposition (τά ἀντίθετα); 6, priority (τά πρώτα); 7, simultaneity (τά σημεία); 8, motion (κίνησις).

The most important part of Aristotle’s treatise on categories is that which relates to species, and since it contains a discussion (and tolerably correct explanation) of the origin of general notions, it proves that Aristotle did not adopt the theory of realism, although realistic expressions occasionally occur in his writings. According to modern usage, the subjects discussed in Aristotle’s categories would belong to metaphysical rather than logical science.

A copious and accurate abridgment of Aristotle’s treatise on the categories may be found in Bartholomew Saint-Hilaire’s ‘Logique d’Aristote,’ tom. i., p. 140-92. See also Ritter’s Geschichte der Philosophie, vol. iii., p. 76.

Predicate. Organon.

Prefix. (Language.)

Prehinite, a mineral which occurs crystallized and massive. Primary form a right rhombic prism. Cleavage perfect. Hardness 3. Formula C.A.B. or C.A.B.2. Colour white, grey, and various shades of green and greenish blue. Transparent, thus, according to the position of the cliche gravity 2.926. The variety which occurs in small thin crystals is called Koupohile. The crystals of this substance have a remarkable tendency to exhibit rounded faces.

Massive varieties: botryoidal, gigabolar, and stalactitic, structure banded, polished; amethystine, compact, with rough surfaces. It occurs also in rolled masses.

Before the blow-pipe it is converted into a white scoria, and fuses into a compact globule; with borax it readily becomes a clear glass.

This mineral was first found at the Cape of Good Hope; it has since been met with in many places in different quarters of the globe, as Scotland, Cornwall, France, &c.

Koupohile occurs at Beaux, department des Hautes-

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PRELUDY. The annexed analyses of Koupitlicy are by Vauquelin (1) and by Laugier (2):—

(1) 20*40 42*50 23 — 28 669
(2) 2

Silica 48 42*50
Alumina 24 28*50
Lime 23 28*40
Oxide of iron 4 2
Potash and soda — 97*5
Water — 2

PRELATE (etymologically from pra and latius), a person preferred or advanced before another; but it is confined to a particular species of preferrment or advancement, namely, that amongst the clergy, and it is applied to those only amongst the clergy who are graduated with the highest dignity: the title of that of bishop or archbishop, to which we may add patriarcho, in such churches as have an officer so denominated. The word prelate however has in antient times been applied to simple priests, members of the clerical body in general.

PRELUDE (Preludium, a preamble), a brief introduction to a piece of (most commonly) piano-forte music; a few chords, or a flourish, to prepare the hand of the player, and draw the attention of the auditors to what is to follow. A prelude is, or is supposed to be, so arranged as to express an insensible effusion, and as such is no bad test of the musical knowledge of the performer.

PREMISES (Orology). Prizes (in the sense in which it is used in the article Bountv) is a reward given out of the public revenue to encourage manufactures or other branches of industry; but prizes given by agricultural and other societies are in reality the same things as premiums. Premiums encourage and reward competition; but when it is proposed to foster any new art by liberal premiums, there is less certainty of an interest thus sustained establishing itself upon the only natural foundation—that which arises from the encouragement of the public; and premiums then fall under the same objections as bounties. These objections are inseparable from a system of bounties, but the judicious distribution of premiums may occasionally be attended with advantage. Premiums encourage and reward competition; but when it is proposed to foster any new art by liberal premiums, there is less certainty of an interest thus sustained establishing itself upon the only natural foundation—that which arises from the encouragement of the public; and premiums then fall under the same objections as bounties. These objections are inseparable from a system of bounties, but the judicious distribution of premiums may occasionally be attended with advantage. Premiums encourage and reward competition; but when it is proposed to foster any new art by liberal premiums, there is less certainty of an interest thus sustained establishing itself upon the only natural foundation—that which arises from the encouragement of the public; and premiums then fall under the same objections as bounties. These objections are inseparable from a system of bounties, but the judicious distribution of premiums may occasionally be attended with advantage.

PREMONSTRATENSIAN ORDER. The Premonstratensians were canons who lived according to the rule of St. Austin, as reformed by St. Norbert, afterwards archbishop of Magdeburg, who set up this regulation about A.D. 1150, at Premonstratton, in the diocese of Liége, in order to place a so-called bishop out of it, as was said, by the blessed Virgin to be the head of this reformed order. These canons were also called White Canons from their habit, which was a white cassock with a rochet over it, a long white coat, and a white cap or coif. They entered into England shortly after A.D. 1140, and settled first at Newhouse in Lincolnshire. They had in England a con-servator of their privileges, but were nevertheless often visited by their superiors at Premonstro, who made great contributions to them, as the generals or foreign bishops of the Cluniac or Cistercians also did from their order, till restrained from it by the parliament of Carlisle, in the last year of Edward I., A.D. 1307. This statute did not restrain their prelates from visiting the clergy in England, governing their monks, or exercising the discipline of their order, provided they carried no money away with them. So that the religious of this order in Englandcontinued under the jurisdiction of the abbots of Premonstro, and the general chapter of the order till A.D. 1512, when they were exempted from it by a bull of Pope Julius II., confirmed by King Henry VIII., that the superiority of all the houses of this order in England and Wales was given to the abbot of St. Mary's at Welbeck, in the county of Chester, who was reckoned about thirty-five houses of this order in England.


PREPOSITIONS are certain words which express a relation between different things. All words may be divided into notional and relational. (Noton, Notional) Nominal words are those which express things, and relational words are those which express objects of the understanding. Relational words are those which merely express a relation between the different things which are expressed by notional words. Thus, in 'he went to town,' 'he walked with his friend,' the words to and with are relational words, that is, they connect the notions of 'he went' and 'he walked' respectively with the notions of 'town' and 'friend.'

Harris defines a preposition to 'be a part of speech devoted itself to expressing certain comparatively small groups of words that are significant, and that refuse to coalesce or unite of themselves.' This definition has been attacked by Horne Tooke, who considers it absurd to imagine that men, in the formation of any language, would invent words which are some means or other things which they reached to a determinate idea, and he accordingly endeavours to show that every preposition was originally a verb or a noun. To a certain extent however both these writers are correct, according to Harris, prepositions are usually only used to unite words that are in themselves significant, that is, they are only relational words; but, at the same time, there can be no doubt that Horne Tooke is right in contending that prepositions were originally significant, since all words which now merely express relations appear to have been originally notional words.

Prepositions are so called because they are prefixed or prefixed to the words with which they are connected; but the name of preposition is sometimes also given to those words which are termed postposed or placed after such words, as in wherewith, wherein, wherefrom, thither, &c. In languages like our own, which have hardly any inflections, the relation which these words express is often expressed by prepositions, but in languages which possess inflections, like the Latin and Greek, the same relation may frequently be expressed by means of cases, which are in fact prepositions placed at the end of a word. Thus, in the expression 'the son of the king,' we express the relation between 'son' and 'king' by the preposition of; while in Latin the same relation is expressed by in placed after the Latin word for king, filius regis. But as the meaning of these case-endings was not always definite enough, it became custom to mark the relation more precisely by prefixing certain words, as in our own language. The case-endings however were not dropped; so that in such expressions as ad urbem, cum reg-e, pro reg-e, the noun may be said to have two words to mark relation, one placed before and the other after it.

The number of prepositions differs, as might be expected, in different languages. The Greek grammarians admit only eighteen, the Latin about fifty. In English the following words are usually considered as prepositions:—above; after; against; among; amongst; amid; amidst; around; round; at; between; betwixt; beyond; before; behind; below; beneath; behind; below; for; from; in; into; near; nigh; of; off; over; on; upon; since; through; throughout; till; 'till; 'till; unto; toward; under; underneath; up; with; within; without.
called inapplicable prepositions, as in English be, for, fore, mis, &c., which occur in such words as be-stir, be-speak; for, for-sake; fore-see, fore-home; mis-take, mis-deed, &c.

PREROGATIVE, a word descended to us from the times of the Romans, or, rather, adopted from their language, to denote a certain power in the constitution of monarchical states, which, though it is held to be in many respects obvious, is not perhaps quite accordant with the analogies. Prae and rogo would seem to give the sense of precedence in asking, while prorogative means precedence in being asked, the right of determining when the forms of the state shall or shall not be. The important distinction is, to whom the prerogative is vested, before any change shall be made in the matters comprised within the prerogative. The term is confined to cases of dignity, to things indeed where, from the interest when men are bound together in a political state, it is assumed by those who might speak, as indeed men sometimes do, of the prerogative of the House of Lords, or the prerogative of the House of Commons, or even of the prerogative of the people, it is more usual to regard the word as belonging to the right which the king possesses of being consulted, and his consent obtained, in whatever concerns the business of the nation.

Thus the consent of the king (or queen regnant) must be obtained before any new law can become a law, any exception can be made in the laws at present existing, and this appears to be prerogative in its purest state, and, indeed, in its only state of absolute purity. Other things which are now understood by the term prerogative, the bridge has been, according to this true and open opinion, which have naturally shot forth out of it; unless we choose to take a view of the whole subject which shall take it wholly out of the scope of the etymological sense, and regard, as indeed many do, the word prerogative as standing to indicate the primordial and original power of any prince, the king of England for instance, which has been from time to time reduced and confined by the resistance, passive or active, of the subject. However, the term is now understood as having been confined to those which have been taken to be the prerogative. All things the king (queen) does by his prerogative, his own sole will, without any application to parliament, or to any court or council whatever, though members of the Privy Council, those particularly who form what is called the archiepiscopal Conclave, are supposed to advise the king in the exercise of his prerogative, and are sometimes made answerable by parliament for the injudicious or dangerous exercise of it. Theoretically however and nominally, these are prerogatives of the king himself—rights inherent in him in virtue of his office, as much his as the subject has certain rights belonging to him, either as a member of the great common of Englishmen, or as belonging to some particular section to which he belongs, or to some particular office in which he is placed. In the mutual respect of each, and the forbearance of each to encroach on the rights or prerogatives belonging to each other, lies the balance of the English constitution; and out of it arises security to all, and the enjoyment of the blessings which belong to a well-ordered political community. When evils are perceived, when the subject claims rights which are incompatible with wholesome government, or when the king claims rights which are not sufficiently opposed to those of the people, or which are opposed to the common good, there are remedial powers in the constitution which bring things right; and it is one of the most important functions of the two houses of parliament to exercise these powers.

PREROGATIVE COURT, a court held by each of the archbishops (or their officials) of England and Ireland, by virtue of his prerogative, for the purpose of trying the validity of wills, registering them, and taxation, and in certain cases of resolving questions of probability or jurisdiction which arise where one dies possessed of bona nominis, that is, of goods to the value of 5l. (except in the diocese of London, where it is 10l.), in one diocese or peculiar, and also goods, altogether of the same amount, in some other diocese or dioceses, peculiar or peculiar, within the same province, or where one, not belonging on a journey, dies in one diocese or peculiar, possessed of goods of that amount in another diocese within the same province. A peculiar is a distinct exempt from the jurisdiction of the bishops or archbishops, and the forms of the Prerogative Court, one administration becomes sufficient; and the inconvenience and uncertainty of taking out administration in various dioceses, &c. are avoided.

Where a bishop or any other person has lands, tenements, or any rent, in any of the dioceses or deaneries of the province of Dublin, the diocesan court of the dioceses exclusively, the prorogative and diocesan courts have concurrent jurisdiction. A probate of the will of a bishop must in all cases be prorogative. A prorogative probate granted where there are not bona nominis in several dioceses, &c. is only valid on one, where there are, is absolutely void. (4 Inst., 335 Williams On Executors, &c.)

PRESBURG, Plumium (in Hungarian, Pozsony), once the capital of Hungary, is situated on the north bank of the Danube, in 48° 8' N. lat. and 17° 10' 45" E. long. It is built on a hill of moderate height, commanding a fine vioew over an extensive plain watered by the Danube, the Vistula, the Morava, and the Tisza. The town is on the horizon southeast of Vienna, and thirteen miles south of the north-west, where it is intersected by distant mountains. The Danube is here 130 toises wide, and is crossed by a bridge of boats 365 paces in length, which was substituted for one 825 feet long and 36 feet broad, which was demolished, and the suburbs are no longer separated from the city. It appears to have existed in the time of the Romans, or at least under the great Moravian kingdom which the Magyars contributed to overthrow. It was chiefly peopled by Hungarians, and was a frontier fortress against the Germans and Bohemians. It suffered severely in the successive wars, as well with those nations as with the Tartars (1241) and the Turks. In 1446, Osten having fallen into the hands of the Turks, was declared the capital of the kingdom, and the diets were held here till the year 1784, when Joseph II. decided that the viroyer and palace, with the high officers of state, should be transferred from the great to the new situation. The emperor is however still crowned here as king of Hungary. Presburg, which was formerly not only the handsomest, but the most important and most populous city in the kingdom, is no longer so far as it belongs to all the inhabitants, of whom 8000 are Protestants and 2700 Jews. The trade of the city is neither flourishing nor increasing: the navigation of the Danube has not afforded much advantage, and the state of the city is now in a very bad way. A great part of the houses are gutted, and a few only remain standing. The principal buildings are—the cathedral, in which the kings of Hungary are crowned; the county-hall, the ancient senate-house, the archiepiscopal palace, the palace of prince Grassalkovics, and the theatre. Among the public institutions are a Catholic academy, with a library of 12,000 volumes; a Protestant lyceum, a Catholic gymnasium, a royal national model school, several other schools (one of them an infan-school), an hospital, and the great library of Count Appony, of 50,000 volumes, three monks' convents, and two nunneries. On a hill out of the city, 430 feet above the level of the Danube, are the remains of the royal palace, which, after having been long used as a barracks, was burnt down in 1811, and has not been restored. The German language and manners prevail, together with the English, French, and Russian. The city is supplied with water from two springs, one on the west, and the other in the east. The city has a good market, and a large fair on the morrow of St. John. The annual revenue is about 30,000 florins. The city is one of the chief manufacturing centres of Hungary, and possesses a large trade to the Russian empire. In the environs of Presburg are many monasteries, and there are numerous places of amusement and public resort. One of the remarkable points is a large hill, on which the king of Hungary rides after his coronation, and brands a naked sword towards the four cardinal points, to intimate
that he will defend the kingdom against its enemies, from whatever quarter they may come.

(Jenny, Handbuch; J. von Thiele, Das Königreich Ungarn; Blumenbach, Gemälden der Oesterreich Monarchie; Hassel; Stein; &c.)

Each Parochial (Geistliche, an elder) is professor of the Christian religion who believe that there is no order in the church, as established by Christ and his Apostles, superior to that of Presbyters; that all ministers, being ambassadors of Christ, are equal by office; that Presbyte, Elder, and Deacon, are only different names for the same person; and that Deacons are laymen whose office is chiefly to take care of the poor. A Presbyter (Predikateur) they regard as a society of clerical and lay Presbyters, or, as the Bishop is the chief of the Ministers or Elders, most of these opinions they allege several passages of the New Testament. They affirm that the primitive form of church government was universally Presbyterian, and that this form, having, after the time of the Apostles, been supplant by Episcopacy, was restored in some parts of Europe after the Reformation had begun.

The most noted Presbyterian Church of the present day is that of Scotland, which is called the Kirk, of which we shall here furnish a short account.

Presbyterianism was introduced into Scotland about 1560. Under Calvin's direction this discipline had already been put into operation at Geneva, and that form had brought by a succession of teachers and brothers, though not in precise form as that which was afterwards given to it, King James I., who had been a Presbyterian in Scotland, and who embrac'd Episcopacy upon coming to the English throne, which it is permitted to be a religious, not a political, office. Scotland. In the reign of Charles I. Presbyterianism regains the ascendency, but Episcopacy was once more declared the established religion at the restoration of Charles II. At the Revolution of 1688, Presbyterianism was re-established in Scotland by authority of Parliament, and thus it has continued to the present time.

The constitution of Presbyterianism in Scotland is as follows: The minister of the congregation and his associate, or ruling elders of a parish or congregation, is the lowest court of judicature, the minister being, ex officio, the moderator or chairman. This Kirk Session has power to cite before it any members of the congregation, and to examine, instruct, rebuke, admonish, and suspend them from the Eucharist. The Kirk Session is next in authority, and consists of all the ministers of a certain district, and one ruling elder from each parish, who is chosen half-yearly. At the meeting of the Kirk Session, the moderator is chosen out of the ministers. There are 69 Presbyteries, each consisting of parishes in number not more than 24 nor fewer than 12. The Provincial Synods, of which there are 15, meet twice in the year, once at the Synod of the Highlands and the other in the Lowlands. Each Synod consists of the ministers of the synod, and the presiding officer is a moderator chosen out of the ministers. There is a General Assembly, which meets annually. This is composed of delegates from each Presbytery, from every royal burgh, and from each Scottish university; and the president is a nobleman who represents the person of the king, and who is called the Lord High Commissioner. In all matters of dispute the appeal lies from the Kirk Session to the Presbytery, from this to the Provincial Synod, and from the Provincial Synod to the General Assembly. Persons are appointed ministers by the laying on of the hands of the Presbytery. The maintenance of the clergy is regulated by the state, and they are nominally paid for their services. The minister is vested with the sacred and altars, and no instrumental music. Its doctrine is Calvinistic. At the Revolution the Westminster Confession was appointed the standard of the national faith, and it was enacted that no minister or clerk to the Kirk Session or preacher in this church, without subscribing to this Confession of Faith as his faith. By the Act of Union in 1707, the same subscription is required of all professors, principals, regents, masters, and others bearing office in any of the following faculties.

There are however many Presbyterians in Scotland who do not belong to the national establishment, and who are called Seceder. But they maintain the same articles of faith as the members of the Kirk, and hold Associate Synods for regulating matters of discipline. They seeke, because they suppose the Kirk to be in a state not consistent with its acknowledged principles.

The first Presbyterian congregation in England was formed at Wandsworth, near London, in 1572. In the reign of Charles I., 1645, it was proposed, in the treaty of Uxbridge, to make the Established Church of England Presbyterian, and the proposition was carried into effect by way of trial in 1646. In 1649 the Presbyterian discipline was adopted, and Charles was made Prince of Presbytery till Episcopacy was restored with the restoration of Charles II. in 1660.

There are still congregations in England called Presbyterian; but in both doctrine and discipline they differ materially from the Scottish Presbyterians. 'The English Presbyterians, as they are called,' says one of their writers, 'adapt nearly the same mode of church government with the Independent. The chief difference is, that they are less attached to Calvinism, and consequently admit a greater latitude of religious sentiment.'

(Broughton's Bibliotheca Historico-Sacra; William's Dictionary of all Religions.)

PRESCOT. [Lancashire]

PRESCRIPTION. 'No custom is to be allowed, but such custom as hath been used by title of prescription, that is to say, from time out of mind. But divers opinions have been of time out of mind, &c. and of title of prescription, which is all one in the law.' (Litt., § 170.) According to this passage, 'time out of mind, and 'prescription,' which are the same thing in law, are defined here, as the same thing in time and usage; but there is a claim or title which is specially called prescription, and which is like custom so far as it has the inseparable incidents of time and usage; but it differs from custom in the manner in which it is established, and in this difference alone the difference is not in the right. This claim is called prescription, because the plaintiff or defendant makes it 'prescribe me,' &c.; stating, after the word 'prescribe,' the nature of his claim.

The following is an example of a prescription in T. l. 114, 4:—"1. S. , seised of the manor of D. in fee, prescribes thus: that I. S., his ancestors, and all whose estate he hath in the said manor, had and used to have common pasture to the number of one cow, or ox, and one horse, within the land of some other, &c., as pertaining to the same manor. The claim of a copyholder of a manor for common of pasture in the manor, alleges a custom time out of mind within the same manor, by which all the copyholders of the manor have had and used common of pasture in it. The claim by prescription then is properly a claim of a determinate person: the claim by custom, as opposed to prescription, is local, and applies to a certain place, and to any person who has used the common of pasture for any determinate number, as the inhabitants of a parish. The following definition of prescription appears to be both sufficiently comprehensive and exact:—'Prescription is when a man used to have anything for which the ancestor of the present prescriber, or they that the estate be hath, have laid or used anything all the time whereof no memory is to the contrary.' (T. de la Ley.) From this definition it follows that prescription may be a claim of a person as the heir of his ancestors, or by a corporation as the representative of the present prescriber, or by a person who holds an office or place in which there is perpetual succession; or by a man in right of an estate which he holds. It is said that certain persons, attorneys for instance, may prescribe that they and all attorneys of the same court have certain privileges; it seems indifferent whether this is called prescription or custom. But it is more consistent with the old definitions to call it prescription, because it is not a prescription of the Liturgy, and it is by or on behalf of a determinate number of persons, that is, all the attorneys of a particular court. It is also said that pariahioners may prescribe in a matter of easement, as a way to a church-yard, but not for a profit out of land: such a prescription however is not contained within the above definition, and is in all respects more properly a custom. It is essential to prescription (subject to the limitations hereinafter mentioned) that the usage of the thing claimed should have been for a time out of mind, and not for a time out of memory. 'Time out of mind' means, that there must be no evidence of non-use or of interruption inconsistent with the claim and of a date subsequent to the first year of Richard I., or the year of grant of a charter of liberty which is the period of legal memory. If it can be shown, either by evidence of custom, or by record, or writing, or by any other admissible evidence, that the alleged usage began since the first of Richard I., the prescription cannot be maintained. Repeated usage also
must be proved in order to support the prescription, but an uninterrupted enjoyment for twenty years has been considered sufficient proof, where there is no evidence to show the commencement of the enjoyment. [Presumption.]

The thing prescribed for must be something definite. It must be such a thing as to be capable of being taken into account by any person, and the possession of which may be considered as having had its commencement at the time of the enjoyment of which the prescription is given. This is the case with respect to a prescriptive right to a corporeal nature, such as a field, a watercourse, or a road, the enjoyment of which would necessarily be known to all the inhabitants of the neighborhood, or to any person who might have occasion to pass through or across it. In such a case, the enjoyment for twenty years would be sufficient to establish a prescriptive right, and the statute would apply. (Litt., § 183.)

Prescription for a correlative possession is a little more difficult to define. It follows that a man cannot make a title to land by prescription, for the evidence of a title to land is quite different from and inconsistent with that of a thing claimed by prescription, which only admits of certain instances. The prescription of the prescriptive rights, such as franchises and privileges which he may have, without a title appearing on record, as for walls, eays, wrek, treasure trove; and to have a park or warren, to have a fair, market, or right to toll, &c.

Nor can a prescription be made for at the present day that may not be the subject of grant; for the allegation of use time out of mind must be usage of something which could originate in a lawful way. When, then, the claim of prescription is made, it is a claim for a term of years, and it must first be shown that there was an original grant which is now lost. (Luttrell's case, 4 Rep., 86.) It is however no proof of a grant.

A question has been raised whether the same thing may be claimed by prescription and by custom, which is nearly the same thing as saying, whether the same thing could be granted to all the inhabitants of a given place, and also granted to one person in that place, either in gross or in respect of a piece of land; as for instance, whether a private right of a water course or a road from an estate and town can be held for and in the name of the person who had the fee, but under the last-mentioned act it shall be sufficient to allege the enjoyment thereafter of right by the occupier of the tenement in respect whereof, or the same is now held or enjoyed in such manner, that the act as may be applicable to the case, and without claiming in the name of right or the owner of the fee, as is now usually done.

This statute applies also to any land or water of the king, his heirs or successors, or any land being parcel of the duky of Lancaster or of the duky of Cornwall. By the common law a man might prescribe for a right which had at any time been enjoyed by his ancestors or predecessors, but the statute of 32 Hen. VIII., c. 5, enacted that no person should make any prescription by the seisin or possession of his ancestor, unless such seisin or possession had been within three years years next before such prescription made. This statute applies to any enjoyment of any such way or other matter as therein last mentioned, during the continuance of such term, shall be excluded in the computation of the said period of forty years, in case the claim shall within three years after the end of sooner determination of such term be resisted by any person entitled to any reversion expectant on the determination thereof. Formerly it was necessary for all persons who claimed any interest in an estate or town to be held for a right, or at any time, to be held for such right, and in the name of the person who had the fee, but under the last-mentioned act it shall be sufficient to allege the enjoyment thereafter of right by the occupier of the tenement in respect whereof, or the same is now held or enjoyed in such manner, that the act as may be applicable to the case, and without claiming in the name of right or the owner of the fee, as is now usually done.

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one year after the party interrupted shall have had notice thereof, and of the person making or authorising the same. In the meantime the dispute must be settled by the interposition of the ancestor or predecessor within sixty years, the statute of Henry VIII. will still apply, and evidence of the commencement of enjoyment within legal memory may still be given. It is a very serious charge 'of breach of the peace' or of non-compliance with the 'establishment of a manor, a court leet, a liberty, separate jurisdiction, treasure trove, wreck, wafis, and other forfeitures, fair, market, fishery, toll, park, forest, chase, or any privilege legally known as a franchise, as well as anything pertaining to the lordships of the manor and of the high banners of the offices.' (Mr. Hawlett's Reply, &c. to certain Evidence before the Select Committee of the House of Commons on Records, February, 1836.)

The word 'pressure' is derived from the Roman law, but the meaning of the term in the Roman law is different. Blackstone says (iii. c. 17, note F.), 'This title of prescription was well known in the Roman law by the name of usucapio (Dig. 41, tit. 3, s. 3), so called because a man that gains a title by prescription may be said usum rem capere.' This remark is not correct. Usucapio in the Roman law was founded solely on possession as such [Possession], and it applied only to 'corporeal things' by the laws of the Twelve Tables usucapio of moveable things was completed in one year; and of land and houses in two years.' (Gaius, ii. 42.) 'To usucapio was afterwards added, as a supplement, the longi temporis prescriptio, that is, an exceptio [exception] of time on their own procedure, and the cases of things which were nearly the same in the case of usucapio.' (Savigny, Das Recht des Besitzes, p. 6.) The term prescription was properly applied to that which a plaintiff (actor) prefixed (presented) in a court by way of appeal and defence, or against a defendant, for the purpose of limiting or qualifying his demand. It seems afterwards to have been used as equivalent to exceptio or plen.

Bracton (iii. 23) gives a definition of usucapio as 'sine titulo et traditio, et per usucapicionem, s. per longam continuam et pacifam possessionem;' but he adds that no time was legally fixed as necessary to make the title perfect, and it depended on the discretion of the justices. It appears then that the duration of the time of prescription commencing from the first of Richard I. (A.D.1189) was not established at the time when Bracton wrote, which was in the reign of Henry III. Bracton observes that 'longa possessio,' as above defined by him, 'sicut jurat parieti possidendi et toliit actionem vero domino potenti,' or the actual possession gives in course of time the right to possess. [Possession.] In the same chapter he treats of the mode of acquiring freehold and corporeal, as well as incorporeal possessions, and alieuces servitutis per patentiam que trahitus ad consensum, et longum usum et pacifacm. Bracton then makes no distinction between a thing corporeal and incorporeal as to the mode of acquiring right by possession and long usage, nor does he specify the time.

(Conyns, Prescription; Viner's Abridgment; Starke, Law of Evidence; Blackstone, ii. c. 17.)

PRESENTATION. [Benefice.] PRESS.

PRESS. To explain the use of this term in mechanics we must remember its previous and common use. When we attempt to move a body, or when we sustain a weight, the effect is accompanied by a perception which is called pressure. The sense of touch is nothing but this perception; contact without pressure is not touch, and there are many objects to which the sense of touch is applied, e.g. a small feather supported on the open palm is not felt, though it would fall to the ground if the palm were removed.

The word pressure is now indisputably connected with the notion of motion caused or prevented. Let the obstacle which is pressed suddenly break, and the hand which pressed must follow, unless the person who presses can take an instantaneous warning to cease his effort. Hence, whenever we see motion caused, prevented, or altered, we are apt to satisfy that the notion that pressure is exerted. The weight in the scale of a balance is said to press the scale; but that we suppose the scale to have muscles to be acted upon, and nerves to carry news of the action to a living being, and that both bodies are in the knowledge of the tendency of the weight to fall, and know that if the counteraction were the work of a human agent, that agent would be conscious of the perception of pressure. Hence every-
PRESTIGN

PRESTIGN. "JOANDE, PREST John," was the name given in the middle ages to a supposed Christian sovereign who was said to live somewhere in the interior of Asia. This report appears to have originated with the Nestorians of Mesopotamia, whose missionaries penetrated into Persia, India, and Tartary, and even wandered near the banks of the river Amur. His residence was at a place called Karakorum. Some of the Mongol khan, and among the rest Temugin, afterwards called Genghis Khan, paid allegiance to Oungh Khan. [Genghis, who was the son of Genghis Khan and Oungh, in which the latter was defeated, with the loss of his life, a.d. 1202. Oungh Khan was reported in Europe to be a Christian, and to have taken priest's orders, and some Nestorian missionaries fabricated and published letters said to have been addressed by him to the pope, Louis VII. of France, the emperor of Constantinople, and to the king of Portugal, in which he is made to style himself John the High-Priest. (Petis de la Croix, Histoire de l'Asie.)

The first European traveller who mentions Prester John was a Franciscan friar, called John Carpini, who was sent, in 1246, nearly half a century after the death of Oungh Khan, by the khan of the Golden Horde, Batou Khan, to the son of Genghis, to induce him to restrain the Mongols from their predatory incursions into Russia, Poland, Hungary, and other Christian countries. Carpini did not meet with the Prester John, but appears to have supposed that he lived in Constantinople, a direction given him by Genghis. After Carpini's journey, another Franciscan monk, called Rubruquis, was sent by Louis IX. of France, who was then in Palestine, a.d. 1255-6, as a missionary to Tartary. The story of Prester John, therefore, is largely a romance. Rubruquis, after great difficulties and privations, reached the camp of Batou Khan in Central Tartary, who forwarded him across the deserts to the court of Mangou, the great khan of Tartary, and hospitably invited him to stay with Prester John, but he found some Nestorian priests, as well as some Mohammedan imans, with whom he had several interviews, which however he acknowledges were to little purpose, as the parties could not understand each other.

Rubruquis says that the Nestorians had greatly exaggerated their own influence in Tartary, as well as the power of the late Oungh Khan, who appears however to have tolerated and even encouraged Christian missionaries in his dominions.

Mangou gave Rubruquis a letter for the king of France, and ordered him to be supplied with all necessary for his return home. On his arrival in Palestine, Rubruquis wrote from Tiberias to the inquisitors at Rome concerning his adventurous journey, which he adduced to Louis, who had returned to France. This curious narrative is written with much simplicity and greater veracity than that of his predecessor Carpini. It is printed in Purchas's collection of travels, and in Bergeron's 'Voyages faits en Asie, par Benoîm de Tudela, Carpin, Rubruquis, &c.'

The existence of a Christian sovereign in Asia called Prester John, continued to be believed in Europe till the end of the fifteenth century, when the Portuguese, having reached India by the way of the Cape of Good Hope, set about looking for Prester John in that country, but without success, though they found a community of Nestorian Christians on the Coromandel coast. At last Pedro Covilham happened to hear that there was a Christian prince in the country of the Abyssines [ Abyssinia ], not far from the Red Sea, and he concluded that this must be the true Prester John. He accordingly went thither and penetrated to the court of the king of Babbeh, who was then in Shoah. [Abyssinian Christians.] It must be remarked however that the 'negus' or king of Babbeh had never assumed the name of Prester John, but called himself Ludolf, ethnarch, of theEthiopians, b. xi. Tellez, Historia Geral de Ethiopia, b. xii.]

PRESTIGN. PRESTIGN, a town in Lancashire, in the hundred of Amounderness, on the northern bank of the Ribble, about 15 miles above its mouth, in 53° 46' N. lat., and 2° 30' W. long. [A 30; and north-west of the General Post-office, London; 221 miles by the Birmingham, Grand Junction, and North Union railways (a distance traversed by the day mail in 104 hours); or 213 miles by the coach-road through St. Alban's, Stony Stratford, Daventry, Coventry, Hereford, Gloucester, Taunton, Wellington, Newcastle-under-Lyme, Knutsford, Warrington, and Wigan.

Preston probably arose out of the decay of Ribchester (probably the Coecim of the Antonine Itinerary), now a village about 10 or 12 miles higher up the Ribble. It was held by Tosti or Tosti, son of Earl Godwin and brother of Harold [Harold II.], and was a borough by prescription; the privileges of the burgesses were extended by a charter of Henry II. without date. There was at an early period an annual fair held by Tosti, and another by Godwin, 2nd of the name, near the town of Preston, of which the fair of the former was called the Preston Fair, after the house of Preston, and the fair of the latter was called the Preston Fair, on the Sunday after the fair of the former. The last fair was held on the Sunday after Midsummer-day. (By the Boundary Act the township of Flasswick [area 600 acres, 759 inhabitants] was added to the borough for parliamentary purposes, and by the Corporation Reform Act for municipal purposes also, making the present area of the

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brough 2560 acres; the population 33,871. Subsequent increase is supposed to have raised the population in about 48,900. The number of houses in 1831 was 6722, viz. 6299 inhabited, 342 uninhabited, and 81 building; the number of families was 6749, only 130 of which were engaged in agriculture.

The staple trade of Preston, till within the last half century, was in linen, for which it was considered a mart, and some of which were manufactured here. Toward the close of the last century the cotton-manufacture was introduced, and is now the staple of the place, giving employment to nearly a hundred thousand of men, women, and boys. There are several iron-foundries, chiefly for making the machinery used in the cotton-manufacture. Some leather is made, and there is a small fishery on the Ribble. The town is also noted for the production of a number of 150 tons: but it is ill adapted for trade: the shipping which frequent it are all coasters. About 30,000 to 40,000 tons of shipping enter the river or clear out yearly. Coal is brought to the town by the navigations of the river Douglas, which flows into the Ribble just above its mouth.

The North Union railroad, and the Manchester and Liverpool railroad, connect Preston with those two great towns, and the Grand Junction and London and Birmingham railways extend the same means of communication to the midland districts and the metropolis. The Preston and Wyre railroad, now nearly finished, connects Preston with the new harbour of Fleetwood at the mouth of the Wyre. Another railroad, in the course of execution, will connect the town with the'seaport of Longridge on the Ribble, and a third, branching from the North Union, connects Preston with Chorley, Bolton, and Manchester. The Lancaster canal, which runs from Preston to Chorley, and from the Manchester and Liverpool canal, passes on the west side of the town, which connects with the great canal system of the manufacturing districts. There are three weekly markets, namely: a的空间 and well-graded market-place in the centre of the town: the Saturday market is by far the largest of the three, and is principally for corn. There are several yearly fairs; one of these, held early in January, is a great horse-fair.

The borough has been divided, under the Municipal Reform Act, into six wards; it has twelve aldermen and thirty-six councillors. The jurisdiction of the borough magistrates is not exclusive, but the county magistrates do not in fact interfere. Quarter Sessions are held before the mayor, aldermen, and recorder. There is a Court of Record for all personal actions to any amount. Petty-sessions are held nearly every day. A public festival, called a Guild Merchant, is held in the corporation it was twenty years since it is commemorated on the first day by a procession of the members of the corporation and of the different trades in characteristic dresses, with bands of music; and by a procession of grocers, so proved to be drunk, preceded and followed by girls employed in the cotton-factory, on the next day. Both processions attend the church. The cost of this pageant is usually very considerable. Preston sent members to parliament in the reigns of Edward I. and II., after which the privilege was lost or neglected till the time of Edward VI. The number of voters on the register, in 1835-6, was 4204.

Preston is one of the polling-stations for the northern division of the county.

The living of Preston is a vicarage in the archdeaconry of Richmond and diocese of Chester, of the clear yearly value of £631. The perpetual curacies are of the following clear yearly value:—St. George, 161s.; St. Paul, 95s.; St. Peter, 112s.; Trinity, 123s. The curate of St. Peter has a glebe-house.

The township of Preston contained, in 1833, an infant-school with 133 children; twenty-seven dame-schools, with 515 children; five grammar-schools, with 102 children; one endowed school (the Blue-Coat school), with 25 boys and 25 girls; five subscription charity-schools, with 763 boys and 583 girls; thirty boarding or day schools, with 1231 boys and 1040 girls; and in the Sunday-schools, with 2226 boys and 2421 girls. Most of these Sunday-schools have lending-libraries attached. There was no school in Fishwick township. In the other parts of the parish there were two endowed day-schools, with 102 children (118 boys and 44 girls); two other day-schools, with 49 children (23 boys and 26 girls); and five Sunday-schools, with about 280 children. (Akin's Enquiries of Manchester; Beauties of England and Wales.)

PRESTON-PANS, a town and parish in Haddingtonshire in Scotland. The parish extends about two miles along the shore of the Firth of Forth, about a mile inland. The town of Preston-pans is on the shore of the Firth, about eight miles in a direct line east of Edinburgh. It is divided into two parts by a rivulet flowing into the sea; the western part is called the Cuthill or Kittle. It is a straggling dingy town, chiefly consisting of a single street parallel with the Firth, and studded here and there with salt or other manufactories, which keep the place almost continually enveloped in smoke. (Chamber's Gazetteer of Scotland.) There is a small harbour, and a number of vessels belonging to Preston, and many are built by its shipwrights. There are coal-pits near the town. Preston-pans is a burgh of barony. The parish, in 1831, had 426 houses, inhabited by 514 families; the total population was 2322, of which about three-fourths were in the town.

The ruins of Dolphingston Castle, once a place of some note, are in the parish.

Preston-pans was the scene of the first pitched battle between the royal forces and the insurgent Highlanders in the rebellion 1745. On the 20th of September, Sir John Cope, with the royalist troops, amounting to 2100 men, infantry and dragoons, marched from Haddington towards Edinburgh, and encamped near the town of Preston pans. Here he was informed that the Highlanders had crossed the Forth, and were in the environs of Preston-pans. The troops had scarcely time to form in order of battle, when they were challenged by the Highlanders: the line was broken by their impetuous onset; the cavalry were driven back without putting up any resistance; and about 170 men, were either killed or captured. Colonel Gardner, who commanded a regiment of dragoons, fell in the engagement, gallantly fighting after his regiment had been put to flight. His body was afterwards brought to the chest were all taken by the insurgents, who lost only about 100 men, killed and wounded. This victory was followed by the almost entire occupation of Scotland by the insurgents and the invasion of England by them. It forms a striking incident in Sir Walter Scott's novel of "Waverley."

PREJUDICE. A presumption is variously defined. The following is a definition:—"A presumption may be defined to be a belief as to the existence of a fact not actually known, arising from its necessary or usual connection with other facts which are known." (Starkie, Law of Evidence, i. 23.) In another passage (p. 1234) the same definition is given in substance, with the word 'inference' substituted for 'belief.'

A fact may be proved by the immediate knowledge of the witnesses to it, which is called direct evidence. If it cannot be so proved, the fact may generally be proved by direct evidence, from which the existence of the fact is to be inferred. If such other fact can be proved, and the existence of the fact in question can be inferred, such inference is a presumption. The inference may be either strictly logical or necessary, or it may be only probable. If it is only probable, that is, the fact inferred may be true or it may not be true. If we cannot infer from the fact proved that the fact in question may be true, there can be no presumption at all as to such last fact. In all cases then, in order to establish a presumption, there must necessarily be an inference from a fact or facts; but the inference may be either necessary or probable. If necessary, it cannot, by the supposition, be disproved; if probable, it may be disproved. If the inference is necessary, or if the evidence, or it may not be possible to disprove it for want of evidence, and yet the inference will still only be probable.

Presumptions which are necessary can hardly ever be considered as conclusive, owing to the difficulty of showing the assumptions which are only probable may be by positive law be made as conclusive as necessary presumptions, that is, it may not be permitted to disprove them when they could be disproved; and such disproof being wanted, and yet the inference is only probable, it may give it the same conclusive force as a necessary presumption.

A presumption, when established, is a fact, when assumed, is legally the same as a fact proved in such manner as the particular system of law requires such fact to be proved. If then the law annexes any legal consequence to a given fact when proved, it annexes the same to it when the fact is legally presumed. It is only by virtue of legal
consequences being annexed to facts that they become objects of jurisprudence. The establishment of a presumption is sometimes made by a judge or a number of judges, and sometimes by a jury, but the consequences are the same. Some writers say that presumptions are divided into artificial and natural, or that they are divided into inferences and presumptions. They divide "artificial or legal presumptions" into two kinds, immediate and mediate. Immediate are those which are made by the law itself directly and without the aid of a jury, and which cannot be made by the aid of a jury. Presumptions may therefore be divided into three classes: 1. Legal presumptions made by the law itself, or presumptions of mere law; 2. Presumptions made by the aid of law and fact; 3. Mere natural presumptions, or presumptions of mere fact. (Starkie, p. 1241.)

The first class of presumptions, it is said, are either absolute and conclusive, or they may be rebutted by evidence to the contrary. The presumption of law that a bond was executed upon a good consideration cannot be rebutted by evidence, as long as the bond is unimpeached. That is an old maxim, that the law has admitted to be a bond. But though the law presumes that a bill of exchange was accepted on good consideration, it admits evidence to show that such was not the fact.

Now this presumption of mere law is nothing more than a fact presumed by a judge or judges, to which fact so presumption may be annexed, and which is not made by the aid of a jury, nor annexed to any defined predication of facts, the law in effect indirectly annexes to that predication the legal consequence which belongs to the presumed fact.

One presumption of mere law may be opposed by another, and the law, that is, the court, must then decide which is the stronger.

Presumptions of mere law, as shown, are such as are made by the court. There are instances of presumptions made by act of parliament, that the legislature has declared that a certain fact or facts, when proved, shall be conclusive proof of another unproved fact which is not a necessary, and, it may be, often not a highly probable inference from the proved fact. A statute of 21 James I. c. 27 (now repealed), made proof of the concealment of the death of a bastard child by the mother conclusive evidence of her having murdered it, unless she could prove that it was honestly in her ignorance deceased. The law declared that a certain presumption shall not be allowed or made. (2 and 3 Wm. IV. c. 71, s. 6.) A presumption of mere law is sometimes called an intendment of law. (Starkie, p. 1243.)

In other words, these are facts which the law, that is, the court, will allow a jury to presume from other facts proved by direct evidence. When the presumed fact is declared by the jury to be a real fact, or is implicitly contained in their verdict, the legal effect is the same as if it were presumed by the judge. Indeed it is said "that this inference (made by the jury) is never conclusive," which appears to mean that there are presumptions which are not necessary, and sometimes may not be highly probable, but they are such as a jury may make (at least under English law), and their verdict will be good. "Thus a jury is required, or at least desired by a court to infer a grant of an incorporeal hereditament after an adverse enjoyment for the space of three years." (Starkie, p. 1243.) On this subject it is said in another passage (p. 1214), "the presumption of right in such cases is not conclusive; in other words, it is not an inference of mere law to be made by the court, and it is not necessary for the advice of the jury to make whenever the presumption stands unrebuted by contrary evidence. Such evidence in theory is mere presumptive evidence; in practice and effect it is a bar."

The second class contains the artificial presumptions of mere law. They are wholly independent of any artificial legal relations and connections, and differ from presumptions of mere law in this essential respect, that those depend upon or rather are a branch of the particular system of jurisprudence to which they belong; but mere natural presumptions are derived wholly by means of the common experience of mankind from the common ordinary habits of society. (Starkie, p. 1245.) This class of presumptions properly belongs to a jury, and yet the courts will sometimes make presumptions of this kind without the aid of a jury. These presumptions then are such as a judge may make without the aid of law, or "natural presumptions," and it seems to be a general rule that whenever there is evidence upon which a jury have founded a presumption according to the justice of the case, the courts will not grant a new trial. (Starkie, p. 1244.)

Though this division of presumptions is far from being characterised by precision, it cannot be denied that it is a kind of index to the practice of the courts as to presumptions. The general rule is that in cases of certain presumptions, which are by no means necessary consequences from the facts proved, are admitted by the judges either as conclusive, or as valid, till they are disproved; these presumptions are sometimes made by the court, but when it is necessary, the court will permit or advise the jury to make them, in order to arrive at a conclusion as to the fact in question; and second, it is founded on the different functions of the judge and the jury, the former declaring the law, and the latter finding the facts, when their assistance for that purpose is necessary.

These presumptions of mere law, whether made by the court or by the jury under its direction, are really artificial artificial rules of presumptions, or presumptions by artifice, or presumptions ex parte, or presumptions of a more or less arbitrary nature, and which may be founded, for instance, in such a case as a parliamentary act of the King and Parliament of Albania at the year 1166. It is an extension of the general law of the land, and is, says Starkie (p. 1245), "a natural presumption, or presumption of mere fact."

Presumptions therefore are incident to every head of law in which proof is required; and the presumptions which a court of law are part of the law of the things to which they relate. The term "presumption" occurs occasionally in the Digest, and in the sense of an inference from a fact proved or admitted. (Bentham, Rationale of Judicial Evidence; Starkie, On Evidence; Phillips, On Evidence.)

PREVESA, a town in European Turkey, on the north side of the entrance of the Gulf of Arii, in 38° 27' N. lat. and 20° 49' E. long. The origin of Prevesa is not known; it is about three miles distant from the ruins of the ancient Nicopolis founded by Augustus Caesar in commemoration of his naval victory of Actium. Its situation, and perhaps its commercial prosperity, made it an object of desire to the Venetians, who obtained possession of it in 1684, and it was subsequently confirmed to them by the treaty of Passarowitz, which now appears to be a direction for the administration of the town, and in 1796 came with them into the hands of the French by virtue of the treaty of Campo Formio. War having broken out between France and the Porte, Ali Pacha of the Kurds, the successor of the Sultan (Albania see 500th memoir,) (10th), 1806, took Prevesa. The French garrison (less than 1000 strong) and the townsmen marched out to encounter the assailants, but were entirely defeated by the Albanians, who took and pillaged the town. The French abandoned Prevesa and the time to have amounted to 10,000 or 12,000. The oppressive government of Ali quickly reduced the population and annihilated the previously flourishing commerce of the town. The street marks and mosques of the Albanians, who rebuilt the churches except one, were destroyed. Ali made Prevesa his chief naval station, fortified the town with new walls, and adorned it by the finest palace or seraglio in his dominions, built at the entrance of the bay. Some new and
handsome houses were built by the Turks and Albanians who settled there, but Preveza has never recovered its prosperity under the Turkish yoke. In 1825 the town suffered much from an earthquake.

In the vicinity of the Gulf of Arta, and to the south of it, there is a population of from 3000 to 4000, and may still be regarded as the principal outlet of the trade of the Gulf of Arta. The chief articles of export are grain, especially wheat and maize, timber, oil, tobacco, cotton, and wool; copates, or Albanian cloaks, are also important articles of export. In Malta, and to various parts of Italy. The timber is the growth of the forests on the southern shores of the gulf. It is sent chiefly to Malta, for building and firewood. The cotton and cotton-yarn are chiefly from Thessaly. The imports are coffee, sugar, common cloth, velvet, iron goods, fire-arms, &c. ('Holland's and Hughes's Travels in Albania, &c."

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mores, Wiltshire, on February 23, 1723. His father Price, of whose second marriage Richard was the sole offspring, was a rigid Calvinistic minister, remarkable for his intolerance, who spared neither means to impress the young with sound Calvinistic doctrine. Richard however began early to claim the privilege of free opinion, and by his scruples often incurred the anger of his parent. The latter died in 1739, and by his will left Richard to the care of his widowed mother, who for some time considered, came into the possession of one son, the widow and six or seven other children being left in straitened circumstances to provide for their own maintenance. The widow and widow's son, and latterly the widow's daughter, for a few months, and shortly after Richard, then in his eighteenth year, resolved on proceeding to London in the hope of qualifying himself for the clerical profession. The heir of his father's fortune provided him with both horse and servant as far as Cardiff, but left him without the means of pursuing his studies for the rest of the journey except on foot or in a wagon. His education during his father's lifetime had been super-

intended by several dissenting clergymen, and on reaching that place he continued his studies under the instruction of several clergymen, and obtained admission to a dissenting academy, where he pursued his studies in mathematics, philosophy, and theology. In 1743 he engaged himself as chaplain and companion to the family of Mr. Strathfield of Stoke Newington. Here he continued to reside during the ensuing thirteen years, at the end of which the engagement terminated by the death of Mr. Strathfield, who left some small property, about the same time his circumstances were further improved by the death of his uncle, and by his receiving the appointment of morning preacher at Newington Green Chapel. He married in 1757. The year following he published his ' Observations on Public Quo-

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of Dr. Price, requires to be noticed under the present article. The problem was: ‘Given the number of times an unknown event has happened and failed; required the chance that the probability of its happening in a single trial lies somewhere between any two degrees of probability that can be named,’ and belongs to that division of the theory termed ‘inverse probabilities’ the more important of the two, and which may be said to have originated with this problem, since it was the first of the kind that was answered, and, notwithstanding its practical utility, no successful attempt had been previously made to answer it. Dr. Price was in an undetermined among the MSS. of the then late Rev. Mr. Bayes, F.R.S., and his chief merit consisted in immediately appreciating its importance, and directing his mind to its improvement and extension. At the request of Dr. Price, the ‘Transactions’ of the year following, shortly after which he was elected a member of the Society.*

PRIDEAUX, JOHN, an English bishop, was born at Stowford, near Lydbury in Devonshire, September 17th, 1578. His father, being in humble circumstances, and having a large family, could give him only a common education. While yet in his boyhood he was a candidate for the office of parish-clerk at Ugborow, a neighbouring village, but he did not succeed, and to this failure he used to attribute his elevated position in after life. He was then noticed by a lady of the parish, who maintained him at school till he had acquired a knowledge of Latin, and he then went to Oxford. He was a poor scholar and did not continue to Christ Church in 1596: he was elected probationer fellow of his college in 1602, being then B.A. In the following year he received holy orders, and having become noted for his profound knowledge of divinity, as well as his great learning in general, he was elected rector of his college upon the death of Dr. Thomas Holland in 1612. In 1615 he succeeded Dr. Robert Abbot, then promoted to the see of Salisbury, as Regius Professor of Divinity, canon of Christ Church, and recte of Ewelme. His afterwards held the office of vice chancellor for several years. 'In the rectorship of his college,' says Wood, 'he carried himself so winning and pleasing by his great authority, as well as his great learning in it, that he found more than any house in the university with scholars, as well of great as of mean birth; as also with many foreigners that came purpose to sit at his feet to gain instruction.' He no less distinguished himself in the divinity chair, which he occupied twenty-six years. In 1641, he was consecrated bishop of Worcester, but on account of his adherence to the king he found his dignity neither pleasant nor profitable. He became so impoverished as to be compelled to sell his books; he was, as he says, 'librorum huiuo.' Having,' continues Wood, 'first by indefatigable studies digested his excellent library into his mind, he was after forced again to devour all his books without a penny to buy them in. He therefore, by patience into bread for himself and his children, to whom he left no legacy but pious poverty, God's blessing, and a father's prayers.' He died of a fever, at Bredon in Worester, July 12, 1650.

The works of Bishop Prideaux were numerous, and mostly written in Latin, upon grammar, logic, theology, and other subjects. Wood describes him as 'a plentiful fountain of all sorts of learning; an excellent linguist, a person of a prodigious memory, and a man of great divinity, that he was called 'Columna fidei orthodoxa, ingenios scholar acade-miae oraculum.' Though he died before the publication of the London Polyglott, he was well known to the editor Bishop Pearson, and was in the latter years of his life engaged on the nicest points of Hebrew criticism, in vindicating the Polyglott from certain cavils that had been raised against it. Bishop Prideaux had a son named Matthias, who was born in 1622, and appears to have been a divinity student at the University of Exeter College. After his death, in 1648, was published, in small 4to, a work of his entitled 'An easy and com-pendious Introduction for reading all sorts of Histories,' with a 'Synopsis of Councils,' added by his father. This work was never reprinted, and might now probably be thought more curious than useful, though it

* It was in the above paper that the important theorem was first announced, viz., that the probability in favour of a hypothesis is proportional to the probability of the evidence when that hypothesis is correct, to the probability of the evidence when the hypothesis is not correct. See 'An Essay towards solving a Problem in the Doctrine of Chances' in 'Transactions of the Royal Society' (1715), vol. 15, pp. 370-418, third edit.) but as Mr. Laplace, in his 'Essai sur la Probabilité,' published in 1812, has observed, 'Bayes' reasoning appears to have confounded the chance of the probability of the event in happening being comprised within the proposed limits, with the probability itself, might furnish some valuable hints to persons engaged in teaching. (Wood, Athenae Oxonienses; Todd's Life of Brian Walton; Chalmers's Biographical Dictionary.)

PRIDEAUX, HUMPEHREY, was born at Padstow in Cornwall, May 3, 1648, of an ancient and honourable family well known in that county. He was sent to school first to Rode, then to Boarding School, and was removed thence to Westminster, to be placed under Dr. Bushy. Here he was soon chosen king's scholar, and after three years he was elected to Christ Church, Oxford, where he became a student in 1570. He was elected in 1575, shortly after, under the direction of Dr. Fell, he published an edition of the historian Lucius Florus. He took his degree of M.A. in 1576, and in the same year he published, by appointment of the dean and canons of Wotton, a posthumous edition of 'Mormora Oxoniensia ex Arundellianis, Seldenianis, aliquo confutatis, cum perpetuo Commentario,' of which a correct edition was published in 1752 by Michael Maittaire. In 1679 Prideaux was presented by lord-chancellor Finch to the rectory of St. Clement's, Oxford, and in the same year, being appointed Dr. Bushy's Hebrew lecturer at Christ Church, he published two tracts of Maimonides with a Latin translation and notes. In 1681 he was installed prebendary of Norwich, and in the following year was made B.D., and shortly afterwards was instituted to the rectory of Bladen with Woodstock, in Oxfordshire. He proceeded to D.D. in 1687. Being exceedingly exercised in the business of his charge for that of Saham in Norfolk, he went to settle upon his prebend in Norwich. Here he became engaged in some severe contests with the Roman Catholics, the result of which has been 'The Sum of the Orders of the Church of England made plain.' He took an active part in resisting the arbitrary proceedings of James II, which affected the interests of the Established Church. In 1688 he was appointed to the archdeaconry of Suffolk, and, not without due consideration of his attachment to the Griffith, and his reverence for William and Mary, and acted up to them faithfully, but he always looked upon the non-jurors as honest men, and treated them with kindness and respect. The last four or five years of his life he was thus engaged and exerted himself to the utmost in discharging his parochial and archidiaconal duties. While the sees of the non-juring bishops were filling up, without the knowledge or consent of the suf- rors he was elected Bishop of Exeter, and offered to Dr. Prideaux, whom he declined it. In 1694 he resigned the rectory of Bladen, and in 1696 he was instituted to the vicarage of Trowse near Norwich. He published in 1697 his 'Life of Mahomet,' of which three editions were sold off the first number, and another in 1715. In 1705 he took up his residence in the room of Dr. Henry Fairfax. On the translation of Dr. Moor from Norwich to Ely, in 1707, Prideaux was advised and encouraged to apply for the vacant see, but he was not at all disposed to seek for such advancement. This year he published 'Directions to Civil and Churchwardens,' a work which has often been reprinted. The best edition is that corrected and improved by Mr. Tyrwhitt, Lond., 1833. In 1710 appeared Dr. Prideaux's work upon 'Tythes,' 1 vol. 8vo, which he had projected in 4 vols, but his plan was defeated by the calamitous destainer of the stone, to use his own language; and this year he resigned the vicarage of Trowse. He died of a disease of the lungs, and his suffering and losing of time, and it entirely disabled him from writing any more. So soon as he still pursued his private studies, and at length, in 1715, he brought out the first part of his principal work, the 'Connection of the History of the Old and New Testament, and the second part in 1716. This work is one of the most widely circulated books in the English language, and it has still a peculiar value among several more recent works of a similar design. It was the last work that he published. But Dr. Prideaux had been living for some time. He died November 1, 1724, in his 77th year, and was buried in Norwich cathedral. About three years before his death he presented his collection of Oriental books, more than 300 in number, to the 241, in the library of Clara, and of posthumous tracts and letters, with a 'Life of Dr. Prideaux,' the author of which is not named, were published in 1748 8vo. Dr. Prideaux was a man of varied and solid learning and of great moral worth and ardent piety.
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(Wood's Athena Oeconomiae; Life, as above; Letters by eminent Persons.)

PRIEST (Saxon, preost; French, prêtre (preatre); Dutch, priest; Spanish, prelado; all related to the Greek presbuteros, an elder, and immediately from the Latin presbyter), in its popular acceptation, is the name of a minister of religion in all ages and countries.

Priest is used to express the Greek hieros (hieré) and the Latin sacerdos, 'sacrificer.' Before the rise of a home, he was what is called a sacrificer. Whatever may be the primitive meaning of the Hebrew ʿāhān (aḥān), it is rendered in the Septuagint by ἱερές, and its usage plainly shows that it denotes a sacrificer. An elder, ἡσαῦρ (zaken), has sacerdōris as its corresponding word.

In Wiclif's New Testament, which is a translation from the Vulgate, priest, answering to the Latin presbyter, several times occurs, where the Authorised Version has elder; e.g. Acts, xiv. 23, 'And whan the hdden ordeyne of prestis to hem bi alle cistes;' c. xv. 2, 'The apostles and presestis;' which, in v. 4 is 'The apostle and the elde men.' James, v. 14, 'Prestis of the churche.'

Priest, in the formularies of the Church of England, is used in its original sense of presbyter, and points out the second degree of the ministers, to be admitted to which a man must be, according to the 34th canon, of the age of four and sixty 'and only complete.' The existence of an official person to act in some way between the Deity and man appears among the earliest notices of history, whether sacred or profane. In the Book of Genesis, Melchisedek is named 'Priest of the most high God.' In order of his order he was also appointed by God to minister in holy things, and whose qualifications and functions are set forth at large in the writings of Moses. The Egyptians had great numbers of priests, and still more so the Hebrews. 'The priest believe, left hand and right;' (Ex. xxi. 22.) In the first ages of the Greeks, the same person was mostly their priest and king. In the course of time the office of priest became distinct, and sometimes women, as well as men, were called by this title. It is probable however that the most ancient priesthood among all nations was that which fathers or heads of families exercised over their own dependents; and thus it will appear that kindly government and authority, one and the same, would naturally spring from the paternal relation. (Shuckford's Connection of Sacred and Profane History.)

PRIESTLEY, JOSEPH, the son of Jonas Priestley, a cloth-dresser at Birstal-Fielfhead, near Leeds, was born at Fieldhead, March 13, 1733, old style. His mother dying when he was six years of age, he was adopted by a paternal aunt, Mrs. Keighley, by whom he was sent to a free grammar-school in the neighbourhood, where he was taught the Latin tongue, by a Roman Catholic priest. His inclina-
tions were devoted to the study of Hebrew under a dis-
senting minister; and when he had acquired some proficiency in this language, he commenced and made considerable proficiency in the study of Greek, but which he abandoned on account of his not being enabled to attend to the school service. He afterwards attended a school in York, from which he was dismissed for reasons of conduct. After returning to Nantwich, he attended a school in Chester for a short time, but without the assistance of a tutor does not appear. In the mathematics he received some instruction from Mr. Haggertone, who had been educated under Maclaurin. From his habits of application and attachment to theological inquiries, his aunt early entertained hopes of becoming a minister. Ill health however, which in many cases induces a preference of a studious to a more active life, led him to abandon for awhile his classical studies, and apply himself to the study of natural philosophy, to which, to use his own words, that his constitution, always far from robust, had been injured by a 'consumptive tendency, or rather an ulcer in the lungs, the consequence of improper conduct when at school, being often violently heated with exercise, and as often improvidently chilled by bathing, &c.' Without the aid of a master, he acquired some knowledge of the French, Italian, and German. With the return of his health his inclinations were again turned to the study of theology, and nineteen (1752), he entered the dissenting academy at Daventry (now 'Coward College,' London), conducted by Mr. (afterwards Dr.) Ashworth, the successor of Dr. Doddridge. His parents were both members of the Calvinistic persuasion, and was also his aunt, who had committed no oppor-
tunity of inculcating the importance of the Calvinistic doc-
trine. As however differences of opinion on doctrinal points were not with her sufficient ground for rejecting the society of her house, but the more he grew to prefer the views of her house became the resort of many clergymen whose views were more or less opposed to those of Calvin. In their discussions young Priestley took considerable interest, and they may be supposed to have had considerable influence in leading him to doubts relative to the tenets on which he had rested his own belief. Before the age of nineteen he styles himself rather a believer in the doc-
tines of Arminius, though he adds,' I had by no means rejected the doctrine of the Trinity or that of the Atone-
ment.' Being however of an inquiring turn of mind, he had admitted a communicant in the Calvinistic congregation which he had been in the habit of attending with his aunt; but the minister having elicted from his replies that he entertained the doubts relative to the doctrine of the human race to 'the wrath of God and the pains of hell for ever,' on account of the sin of their first parent, his ad-
misssion was refused.

On returning from the academy he found the professors and students about equally divided upon most questions which were deemed of much importance, such as liberty and neces-
sity, the sleep of the soul, &c., and all the articles of theo-
ological orthodoxy and heresy, which thus became tops of animated and frequent discussions. The spirit of contro-
versy thus excited was in some measure fostered by the plan for regulating their studies, drawn up by Dr. Doddridge, which specified certain works on both sides of every ques-
tion which were not to be read by the students as an abridgment of for their future use. Before the lapse of many months, he conceived himself called upon to renounce the greater number of the theological and metaphysical opinions which he had imbibed, but which he himself observes, 'I came to embrace what is generally called the heterodox side of every question;' but notwithstanding the great freedom of our debates, the ex-
treme of heresy among us was Arianism, and all of us, I might almost say all, were convinced of the doctrine of the Atonement. During his residence at the academy, he composed the first part of his 'Institutes of Natural and Revealed Religion,' published in 1773; the remaining parts of which were to be published in 1799.

On quitting the academy in 1755, he became minister to a small congregation at Needham-Market in Suffolk, at an average salary of 30l. per annum. To increase his income, he circulated proposals for teaching the classics, mathematics, &c., for half-a-guinea a quarter, and to board his pupils for 12 guineas a year. Finding these produced no effect, and that his congregation, on becoming acquainted with his opinions, were gradually forsaking him, which however may be partly imputed to an increasing impudence in his speech, he quitted Needham in 1758, for a similar but temporary engagement at Nantwich in Cheshire. Here he was more successful as a schoolmaster, and was able to purchase an acquisition to his library, some philosophical apparatus, including an air-pump and electrical-machine, and also to keep out of debt, which, through life, he always made a point of doing. While at Nantwich he wrote his 'Chemical History,' which, Old and New Testaments convinced him that the doctrine of the Atonement, even in its most qualified sense, had no countenance either from scripture or reason,' and inducemed him to compose his work entitled 'The Scripture Doctrine of Remission, which shows that the Death of Christ is no proper Sacrifice nor Satisfaction for Sin; but that Pardon is 

Dr. Wilkinson, an ironmaster of Wales, a lady of great amia-

ability and strength of mind, by whom he had several chil-
dren. Here also he composed several works, among which
are his lectures on 'The Theory of Language and Universal Grammar' (1783); on 'Oratory and Criticism' (1777); and 'History of the English Language and Constitution of England' (1772); an 'Essay on a Course of Liberal Education for Civil and Active Life' (1785); 'Chart of Biography' (1765); 'Chart of History' (1769), &c. A visit to the metropolis was the occasion of the occasion of his introduction to Dr. Franklin, Dr. Johnson, and others. To the first of these he communicated his idea of writing a historical account of electrical discoveries, if provided with the requisite books. These Dr. Franklin undertook to pro-
vide, and before commencing his work he submitted to him the plan of the work he sent him a copy of
of it in print, though five hours of every day had been occupied in public or private teaching, besides which he had kept up an active philosophical correspondence. The title of this work is *The History and Present State of Electricity,* with *Original Experiments,* 1767 (third edition, 1773).* Shortly before (1766) its publication he was elected a member of the Royal Society, and about the same time the honorary title of Doctor of Laws was conferred upon him by the University of Edinburgh. The approbation bestowed on his *History of Electricity* induced him some time after to write another, *History and Present State of Discovery relating to Vision, Light, and Colour,* 2 vols. 8vo, 1769, in which he intended to be succeeded by a similar account of the other branches of experimental science; but the sale of this work not answering his expectations, the design of the second, and by which the work itself did not evidence any very intimate knowledge of the subject.

A disagreement between the trustees and professors of the academy led to his relinquishing his appointment at Warrington in 1773. His next engagement was at Mill-Hill chapel, Leeds, where his theological inquiries were resumed, and several works of the kind composed, chiefly of a controversial character. The vicinity of his dwelling to a public brewery was the occasion of his attention becoming directed to pneumatic chemistry, the consideration of which he commenced in 1768, and subsequently prosecuted with great success. His first publication on this subject was a pamphlet on *Impregnating Water with Fixed Air* (1772); then a series of experiments, principally in *Observations on Different Kinds of Air,* to which the Copley medal was awarded in 1773.

No one, observes Dr. Thomson, *ever entered upon the study of chemistry almost more advantageously than Dr. Priestley,* and yet few have occupied a more dignified station in it, or contributed a greater number of new and important facts. The career which he selected was new, and he entered into it with a more prompt decision, he warped less judgment and limited the views of those who had been regularly bred to the science. He possessed a sagacity capable of overcoming every obstacle, and a turn for observation to produce a phenomenon, and a power of giving it which presented itself to his view. His habits of regularity were such that everything was registered as soon as observed. He was perfectly sincere and unaffected, and the discoveries of truth seems to have been, in every case, his chief and undisguised object. He discovered oxygen gas, nitrus gas, nitrous oxide gas, nitrous vapour, carbonic oxide gas, sulphuric oxide gas, fluoric acid gas, muriatic gas, and ammnal gas. The first of these, which he named dephlogisticated air, the third appears to have been the first by him which he had a power of concentrating the sun's rays upon red precipitate of mercury. [OXYGEN.] He showed that the red colour of arterial blood resulted from its combination with the oxygen of the atmosphere. He was the first who, by procuring the phosphorescence during the processes of combustion and putrefaction arose from a similar abstraction of oxygen; and recognised the property possessed by vegetables of restoring the constituent thus abstracted. Moreover the pneumatic apparatus now used by chemists was principally invented by him. *But though,* observes Dr. Thomson, *his chemical experiments were for the most part accurate, they did not exhibit that precise chemical knowledge which distinguished the experiments of some of his contemporaries. He never attempted to determine the constituents of his gases, nor their specific gravity, nor any other numerical result. Of this he himself was distinctly aware; for in a letter written merely to the editor of *The Gentleman's Magazine* (1791), he observes: As to chemical experiments, I am now convinced I could not have acquired myself in it to proper advantage.... Though I have made many discoveries in some branches of chemistry, I never gave much more thought to their routine of it, and know but little of the common processes.*

The theory promulgated by Lavoisier, though founded on the discoveries of Cavendish and Priestley, was never adopted as a practical philosophy. It was the resultant of a scientific theory notwithstanding the many facts and arguments adduced against it.

While at Leeds, very advantageous proposals were made to him to accompany Captain Cook in his second voyage to the South Seas; but when about to prepare for his departure, it was intimated to him by Mr. (afterwards Sir Joseph) Banks, that objections to his leaving the country, successfully urged by some of the ecclesiastical members of the Board of Longitude.

In 1773, through the recommendation of Dr. Price, he received the appointment of printer and literary companion to the Earl of Shelburne, with a salary of 250l. a year, a separate residence, and a certainty for life in the event of his lordship's death or their previous separation. In the second year of this engagement he accompanied his patron on an examination through the extensive works at Paris; his philosophical publications procured for him an easy introduction to several of the leading chemists and mathematicians, whom he describes as professed atheists; and it was during this time that he was the only individual they had ever met with, and of whose understanding they had any opinion, who was a believer in Christianity. To combat their and similar prejudices, he wrote his *Letters to a Philosophical Unbeliever,* containing an examination of the principal objections to the doctrines of natural religion, and especially those contained in the writings of Dr. Hume (1780); to which he afterwards added the *Statement of the Evidence of Revealed Religion,* with an additional volume on the two last chapters of the first volume of Mr. Gibbon's *History of the Decline and Fall of the Roman Empire* (1787).

While resident with Lord Shelburne, who allowed him 40l. a year towards defraying the expenses of his chemical experiments, and a subscription to *The Analyst,* he made the first four volumes of his *Experiments and Observations on Air,* 1774-1779; a fifth appeared in 1780. He also wrote his *Miscellaneous Observations on Education* (1778), and an *Introductory Dissertation* to *Practical Astronomy* (1780). In an essay written expressing his doubts concerning the immateriality of the sentient principle in man, he was denounced in most of the newspapers and other periodicals as an unbeliever in revelation and religion. Among his other works, *Disquisitions relating to Matter and Spirit* (1777), wherein his object is to show that man is wholly material, and that our only prospect of immortality is from the Christian doctrine of a future state, in the latter year appeared his work on the *Doctrine of Necessity.*

The cause of the separation between Priestley and Lord Shelburne (1780) has never transpired, and does not appear to have been known to Priestley himself. Some have attributed it to the odium to which the works last mentioned subjected their author, and to the invidious attacks which issued in almost all quarters from the press; but whatever may have been their true motives, the conduct of both parties has been somewhat abnormal. In a society, however, with an annuity of 150l. a year, and in 1787 Lord Shelburne made overtures for renewing the original engagement, which however Priestley thought proper to decline.

Among the chemists who had colluded with him, as we have seen, were successively repudiated by Dr. Priestley, it is remarkable that the doctrine of the Trinity should not have been hitherto included, at least not in the same unqualified manner. In a letter to Mr. Henderson, dated August, 1774, he has left a confession of his faiths at that time. *I believe,* he writes, *the prophecies in our Bible were given by God; that the gospels are true; that the doctrine of original sin is absurd; that the spirit of God only assists our apprehension; that the foreknowledge of God, held by the Armenians, is equal to the decree of God held by the Calvinists; that they are both wrong; and that both faiths is the pains of hell are purgatory. Many things I yet doubt of; among these are the Trinity and the mediation of Christ.*

On leaving Lord Shelburne, he became minister to the principal dissenting congregation at Birmingham, and a subscription was entered into by both the nonconformist and philosophical experiments and promoting his theological inquiries. His receipts from these sources must, by his own account, have been very considerable. Offers were made to him to continue these benefactions, but he declined all. In 1782, he published his *History of the Corruptions of Christianity,* 2 vols. 8vo. A refutation of the arguments contained in this work was proposed for one of the Haggard prizes; and in 1783 he was burnt by the common hangman in the city of Dort. It was succeeded by his *History of Early Opinions concerning Jesus Christ,* 1784, 4 vols. 8vo.

A literary warfare was now ensued between Priestley and Dr.
Horsley, by both of whom it was carried on with much warmth. In a letter to Dr. Price, dated Birmingham, January 27, 1791, he says, 'With respect to the church with which you have meddled but little, I have long since drawn the sword and thrown away the scabbard, and am very easy about the consequences.' But he did not confine himself to dealing with churchmen; his object was to obtain for the dissenters what he considered to be their rights, and in the pursuit of which he published about twenty volumes. He attacked certain positions relating to the dissenters in Blackstone's Commentaries with a vigour and severity which seem to have surprised his more courteous and feeble statesmen.

His 'Familiar Letters to the Inhabitants of Birmingham,' from the ironical style in which they were written, excite even the populace, urged on by party malice and bigotry. His Reply to Burke's Reflections on the French Revolution, an event to which the lower orders of Birmingham were at that time unfavourably disposed, led to his being nominated a citizen of the French republic; and the occasion of a public dinner given by some of his friends, July 14, 1791, in celebration of the anniversary of the destruction of the Bastile, at which however Priestley himself was not present, afforded to an ignorant mob the opportunity of gratifying the malignity of their passions and the groundless apprehensions of the polyvalent. After demolishing the place where the dinner had been given, they broke into his house, destroyed his philosophical apparatus, a valuable collection of books, and a large number of manuscripts, the result of many years' labour, after which they made an unsuccessful attempt to burn the dwelling and what was left in it. [BIRMINGHAM.] An eye-witness of the 'riot' asserts that the high road, for full half a mile of the house, was strewn with books, and that on entering the library there was not a dozen volumes on the shelves, while the floor was covered several inches deep with the torn manuscripts. In the meantime, he and his family were forced to seek safety in flight. The first two nights he passed in a post-chaise, the two succeeding on horseback, but owing less to his own apprehensions of danger than to those of others. The sum awarded to him at the assizes as compensation for the damage to his house, Heathen Philosophy compared with those of Revelation (posthumous). He died February 6, 1804, expressing the satisfaction he derived from the consciousness of a good life and the confidence he felt in a future state in a happy immortality. On his death becoming known at Paris, his éloge was read by Cuvier before the National Institute. There is a statement in more than one work that Priestley's death was occasioned by poison, but it does not appear to be supported by any authority. The auto-biography of Dr. Priestley, originally written, as he informed us, during one of his summer excursions, concludes with the date 'Northumberland, March 24, 1795.' It was published in America after his decease, with a continuation by his son Joseph Priestley, and observations on his writings by Thomas Cooper (president judge of the fourth district of Pennsylvania) and the Rev. William Christie. Priestley's Correspondence has been collected and incorporated with the above memoir by Mr. John Towlill Rutt, forming the first two volumes of his collected edition of Priestley's Philosophical and Miscellaneous Works,' in 52 vols. 8vo., Hackney, 1817, &c. At pp. 537-544 of the second volume of this edition will be found, chronologically arranged, a complete list of Priestley's works; an imperfect list is given in Watt's Bibliotheca Britannica.'

(Thomson's Annals of Philosophy, 8vo., vol. i. 1813; Thomson's History of the Royal Society, 4to., 1812; Cuvier's 'Notice of the Life of Priestley,' in the Biographie Universelle; the articles 'Electricity' and 'Chemistry' in the Encyclopaedia Metropolitana, by the Rev. Francis Lunn; Rutt's Memoir and Correspondence of Priestley, above mentioned, &c.)

PRIMATE. [ARCHBISHOP.] PRIMATES, the name given by Linnaeus to the first order of Mammalia, and thus characterised by him:—Dentes primores incisores; superiores in., parallelis. Mammis pecora illis.

The order contains the following genera:—Homo, of which Linnaeus records two species, viz. Homo sapiens and its varieties (Man), and Homo Troglodytes (Homo sylvestris, Orang Outang, Buit.).

STINAE, thirty-three species. Lemur (including Lemur coluna). [PLEUROPTERA.] Vesperitilo, six species. [CERIOPHORA.]

END OF VOLUME THE EIGHTEENTH.

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