This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world’s books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that’s often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book’s long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

+ **Make non-commercial use of the files** We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.

+ **Refrain from automated querying** Do not send automated queries of any sort to Google’s system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.

+ **Maintain attribution** The Google “watermark” you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.

+ **Keep it legal** Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can’t offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book’s appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google’s mission is to organize the world’s information and to make it universally accessible and useful. Google Book Search helps readers discover the world’s books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at [http://books.google.com/](http://books.google.com/)
THE PENNY CYCLOPAEDIA

OF

THE SOCIETY

FOR THE

DIFFUSION OF USEFUL KNOWLEDGE.

VOLUME XVIII.

PERU—PRIMATES.

LONDON:
CHARLES KNIGHT AND CO., 22, LUDGATE STREET.
MDCCXCXL.

Price Seven Shillings and Sixpence, bound in cloth.
COMMITTEE

Chairman—The Right Hon. LORD BROUGHAM, F.R.S., Member of the National Institute of France.

Vice-Chairman—JOHN WOOD, Esq., F.R.S.

Treasurer—WILLIAM TOKE, Esq., F.R.S.

C. L. Goldsmith, Esq., F.R.S. and F.R.A.S.
French Henry Goldsmith, Esq.
George Birkbeck, Esq., F.R.S. and F.R.A.S.
T. J. Greaves, Esq., A.M., F.R.S.
J. T. Crookes, Esq., F.R.S.
G. A. Cousens, Esq., F.R.S., and L.S.
M. D. Hill, Esq., Q.C.
Robert Hill, Esq., F.R.A.S.
Right Hon. Sir J. C. Hobhouse, Bart., M.P.
Thom, Hodgson, M.D.
David, Jardine, Esq., A.M.
Henry B. Ken, Esq.
Thomas Bewick Esq., A.M., F.R.A.S.
Thomas Henry Lester, Esq.
James Losh, Esq., M.P., F.R.S.
George Long, Esq., A.M.
R. Maitland, Esq., A.M.
A. T. Mainland, Esq., A.M.
Mr. Sergeant Manning.

LOCAL COMMITTEES.

Humphry, Newcomen—Prof. W. Pugh, Esq.
Norwich—Richard Bacon, Esq.
Wey, Fothergill, Esq.
Oxford—Dr. Colet, M.D.
Oxford—Ch. Dawes, M.D., F.R.S., Prof. Chem.
Rev. Dr. Powel, Sav. Rof.
Rev. Mr. John Jordan, R.A.
Newcastle—Cousin Stecher.
Falmouth—H. Wellcome, Esq., F.R.S., M., Wm. Snow Harris, Esq., F.R.S., E. Moore, M.D., F.L.S., Secretary.
Dr. Truell.
Presbyterian, Dr. H. Brydges, Bart.
A. W. Davis, M.D.
Rev. P. K. W., M.A.
Rutland—Rev. The Warden of
Hamphrey, Jones, Esq.
Solihull—Rev. J. Barritt.
Sheffield—H. Abrahams, Esq.
Skeffington—H. F. Harrington, Esq.
Newcastle—R. A. Stannett, Esq., M.P.
South Wales—John Nichollett, Esq.
St. Asaph—Rev. George Strong.
St. Michael's, New Sing, T. J. Colby, Esq., Treasurer.
Henry Cooplock, Esq., Secretary.
Sydney, New S.Wales—W. M., Manning, Esq.
Tasmania—Rev. W. F. John Rundle, Esq., M.P.
Wro—Henry Sewell Stokes, Esq.
Torquay—W. Weir, Messrs.
Plymouth—Prof. Tucker.
Wales—Ch. Dawes, M.D.
C. H. Hebb, Esq.
Wrexham—Thomas Egerton, Esq.
Inman—C. E. Rambold, Esq.
Diane—Rev. J. Keenick, M.A.
Birmingham—W. Phillips, Esq., F.R.S., F.G.S.

THOMAS COATES, Esq., Secretary. No. 59. Lincoln's Inn Fields.

William Allen, Esq., F.R.S. and F.R.A.S.
Chas. Ansell, Esq.
Hydrographer to the Admiralty.
George Burrows, M.D.
Peter Stafford Carey, Esq., A.M.
John Conolly, M.D.
William Combe, Esq.
R. C. Craig, Esq.
J. F. Davis, Esq., F.R.S.
H. T. Dibdin Herze, Esq., F.R.S.
The Right Hon. Lord Denman.
Samuel Dugard, Esq.
The Right Rev. the Bishop of Durham, D.D.
N. P. Ellis, Esq., A.M., F.R.A.S.
John Elliston, M.D., F.R.S.
George Fraser, Esq., M.D.
Thomas Falconer, Esq.

Devonport and St. Austell—John Col, Esq., F.R.S.
John Norman, Esq., F.R.A.S.
Mr. Coll. C. Hamilton Smith, F.R.S.
Dahl—T. Drummond, Esq., B.E., F.R.A.S.
Havana—Sir G. Heil, F.R.G.S., L.E., and E.
J. T. Truell, M.D.
Havana—Josiah Wedgewood, Esq.
Leicester—J. Tyrell, Esq.
John Milford, Esq. (Comer.)
George Mainland—Dr. Maitland, Cowbridge.
W. Williams, Esq., Abergelewyn.
T. Alexander Mcgregor, Esq.
J. A. D. O'Dwyer, Esq.
J. J. Carver, Esq.
Lancashire—Dr. H. Marshall, Esq.
J. W. Woolgar, Esq.
Henry Rowse, Esq.
Liverpool Soc. As—W. W. Currie, Esq., Ch.
J. Outlet, Esq., Treasurer.
Rev. Wm. Sheppard, L.L.D.
Plymouth—B. Goldfin, Esq.
Maldon—Clement T. Smyth, Esq.
John Case, Esq.
Manchester Soc. As—G. W. Wood, Esq., M.P.
Mr. Ch.
Sir BenjaminHeywood, Bart.
Sir George Phillips, Bart., M.P.
Rev. G. Godwin, Esq.
Muskau—Rev. George Waddington, M.A.
Mr. Heald—Sir J. Goats, Bart., M.P.
Mitcham—John G. Hall, Esq.
Mainland—J. M. Montgomery, Esq.
Neath—John Rawland, Esq.
Newport, Isle of Wight—Ab. Clarke, Esq.
Richard—W. Turner, Esq.
R. G. Kirkpatrick, Esq.
Mr. John Miller, Esq.

London: Printed by W. Clowes and Sons, Stamford Street.
PERU is a country in South America, situated between 3° 30' and 21° 29' S. lat., and between 65° and 81° 20' 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 those states, at the most southern point of Peru, is formed by the small river Loa (21° 29' 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 Guadiana (17° 50' S. lat.), which is reached by the main road from Lima, and then winds along 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 Tuche, an affluent of the Beni, and some rivers which are supposed to fall into the Purus. From the mouth of the river Tuche, the boundary-line between Peru and Bolivia runs along the Rio Beni to its junction with the Guapore, by which the river Madre 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 650 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° 29' 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 10, 15, or 20 miles, there is 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 balistas. 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 river 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 from the spring is excellent. From Arica to the border of the last of Iquique, which is formed by a low island, is 100 miles. The northern extremity of this coast-line, is also formed by a low island, called Huans, 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 650 miles, the coast lies east-south-east and east-west-north-west. Where the cliffs 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 good. 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 Islay, the port of Aconcagua. Cove Molleudo formerly served for that purpose, but it has so changed, that at present it only admits boats, or very small coasting vessels. Port Islay is formed by a few straggling islands which lie off Point Islay, 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 is sometimes impracticable for several days. Point Lomas, the port of Acati, lies farther 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. Nicolas, with excellent anchorage and tolerable landing; but the country about them is sterile and uninhabited. Farther west is the Bay of Independencia, which lies between Cape Quemada and Cape Carreta, and is protected towards the sea by two islands, Santa Rosa and Santa Vieja, of which the latter rises to a considerable elevation. It extends 15 miles from south-east to north-west, and is about 34 miles broad. There is anchorage in all parts of this spacious bay, the bottom being quite regular in about 20 fathoms. It may be entered from the south by the Strait of Serrate, between the island of 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 Carreta. 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 Vol. XVIII.—B
620 miles, runs north-north-west, and exhibits a much greater portion of low sandy beach than is found farther south. A high ground invariable back of this coast, and a low clay plain in front of it, rising with a steep and in others with a gentle declivity. In a few places the high ground is six miles from the sea. Where the coast is high the rocks are frequently low, but in several places they rise to 100 or 300 feet. In crossing along this coast, we find the beach 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., most islands which are visited by the commerce of the Bay of Pisco, 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 the archipelagoes is a long, mile wide, and of considerable elevation. North of it are the Ballista Islands, and north of them the Chineana Islands, both clusters of low rocks. 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 Parana, is generally used; it is called the Boqueron of Pisco. Within the bay there is good anchorage, and a fine beach. This Bay of Pisco is visited by ships, as the surrounding country is rather fertile, and the commerce of the town of Pisco is considerable.

Opposite the town of Cerro Azul there is only an open roadstead, with bad anchorage, and a heavy surf constantly breaking on it. Between the bay and the island of S. Lorenzo, which is four miles and a half long from south-east to north-west, and a mile wide: its highest part is 130 feet above the sea-level. The bay, which is extensive and commodious, is good anchorage, 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 Callao and the southern extremity of the island. Callao Bay, on the north of Salinas, which extends five miles into the sea from south to north, is of large dimensions, and affords good anchorage, but it is seldom visited. The bay of Sapé, to the north of Cape Thomas, is small, but as it is contiguous to a fertile district, it is much visited by vessels. The port of Guarnay, north of Point Logartito, 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, Lasna, Samancio, or Huammacho, Ferrol, and Santa. That of Samancio is the largest port north of Callao, being six miles long from north-west to south-east, and four miles wide. The entrance is two miles wide. Port Ferrol is nearly equal 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 north, and the town of Trujillo has no shelter. Between Callao and Bay de Luque there are only open roadsteads with bad anchorage.

North of the roadstead of Lambayeque, and between it and the Bay of Guayaquil, a huge promontory runs out into the sea. At its base, between Lambayeque and Point Maipeko (3° 30' S. lat.) it is 420 miles wide, and its coastline exceeds 300 miles. Between Point Aguja and Cape Blancho, 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 brushwood. In this part there are two indentations, which form two tolerably deep but open bays. The southern is the Bay of Secura, which is six miles deep, and at its entrance, between Cape Pisura and the Little Lobos Island of Pitya, 12 miles wide. It is open to the swell of the sea, and is only navigated by the Indians in balzas. The Bay of Pitya, which is farther north, is of smaller dimensions, but it is the best harbour on the coast of Peru, and is more visited by foreign vessels than any other harbour except Callao.

As the heavy surf occasioned by the swell of the Pacific renders landing with boats always dangerous, and often impracticable, balzas are used along this coast. These balzas differ in materials and form on the different parts of the coast. In Chile and the southern coast of Peru the balza is a small, light, and, though often made of long lengths of wood, tightly and inflated like a bladder: they are so light that they float over the heaviest surf without danger. Two of these balzas are fastened together, and a sort of platform made for the purposes of the voyage. The canoe is fixed on the back of the balza, and a steersman, with a long oar, guides the balza. The boat is made of reeds, and is a small, which is most used in landing. The wind 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, a kind of boat is used, made of long lengths of reeds, and bundles of reeds fastened together and turned up at the bow. Being very light, it is thrown on the top of the surf upon the beach, and the fisher men who use them jump off and carry them to the shore. These balzas are made of reeds. It seems that each bay or road has its peculiar balza.

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, Monsanas, and the plains contiguous to it is 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 6000 and 10,000 feet; and from this elevation it slopes towards 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 irregularity in the slope of the land gives rise to depressions descending from the Andes 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 dry at one time and flow at another; and a few preserve a running stream all the year round. As it never rains in the lower portion of this region, vegetation and agriculture do not extend beyond the reach of irrigation. The narrow strips along the rivers are cultivated in proportion to the supply of 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 mouths. Some of these valleys from the other another 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 partially cultivated, and have never been seen on the, 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. On account of the 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 breeze which goes from the south. The vales are most numerous in that part where the coast runs from south-south-east to north-north-west, between Lambayeque on the north and Cape Carreta on the south. In this part they are on an average 10 to 12 miles distant from one another, and have a better supply of water than in other parts of Peru. Where the coast runs from north-west to south-east, between Cape Carreta and Arica, the vales are less extensive, and from 15 to 20 miles distant from each other. Further south they are very narrow, 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 peculiar way, of which no satisfactory explanation has been offered.
PER

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 neblina. In this fog the surface of the ground and the objects at a moderate distance cannot be seen. About ten or eleven o’clock the fog rises into the atmosphere, but does not break into clouds. This fog covers the sun so effectively as to intercept the rays, and the disk is hardly visible. During this period the earth is constantly covered with dew 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 the fog is clearing the coasts of the country, and constitutes their winter, the higher declivities of the Andes enjoy fine weather and have their summer. In the month of January the rains on the mountains commence, and they last about three months. The rains occur however earlier 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 prevails, but it is usually light and variable, but gradually increases till one or two o’clock 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 cool. About eight or nine o’clock in the evening light sea-breezes begin, and continue until sun-rise; and 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 fogs, the air is raw and damp, and woollen clothing is necessary for the preservation of health. The heat above 5000 feet is represented by the symbol 72°, the maximum 82°, and the minimum 55°. In the day-time it varies between 72° and 77°, and in the night between 60° and 65°.

The prevailing winds along the coast blow from the south, varying between south-east and south-west. They are seldom stronger than a fresh breeze, especially along the coast south of Cape Carreta, where calms sometimes set in and last several days. Farther north, these strong, irregular, blow with greater regularity; and near Cape Blanco they sometimes blow with great force. In winter light northerly winds are occasionally experienced. At some distance from the shores the prevailing winds blow from south and south-east. On the coast the strong, irregular thunderstorms occur; lightning 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 begin to increase at the height of from 8000 to 9000 feet, it is evident that such tracts must have the advantage of annual rain.

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 the produce of the ground is in general, which in 7°, 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 classes. Rice is extensively grown in some of the wider northern vales, and is exported. Wheat succeeds only in the more elevated parts of the valleys, where barley also is grown. Potatoes and sweet potatoes are generally cultivated, as also manioc, yams, and bananas to a smaller extent. Tobacco, sugar cane, cotton, rice, peas, beans, hemp, hemp, and sugar is exported to all the American countries bordering on the Pacific. Most of the fruit-trees peculiar to the southern countries of Europe succeed well, but those which require a more warmth, such as peaches, nectarines, apples, filberts, and almonds are imported from Chile. Vines grow every in every valley, and good wine is made in several places, as at Pisac, Nasca, and Ica. There are olive-trees, but they do not supply an article of exportation, the consumption of olives in the country being considerable. There are few natural meadows; the want of them is supplied by the cultivation of lucerne, which has spread over all the valleys.

The soil of the vales consists of sand mixed with vegetable mould, and does not possess a great degree of fertility. As it is cultivated every year, it requires a great deal of manure. This manure is obtained from the small rocky islands, and also from the rocky cliffs along the coast, which are covered with a layer of the excrements of sea-fowls, several feet thick, which appear at a distance as white as snow. A great number of small coasters are continually employed in collecting these excrements, and conveying them to the neighbouring anchorage, where it is bought by the cultivators of the soil.

II. The Mountain Region, or Montaña, runs parallel to the Pacific, and from 20 to 25 miles from the shores. It comprehends the central portion of the Andes, namely, the northern part of the Bolivian Andes and the whole of the Peruvian Andes. The Bolivian Andes consist of two elevated ranges running nearly parallel to one another from south-east to north-west, between 26° and 15° S. lat. The eastern chain contains the highest summits of the Andes, the Nevados of Illimani and Sorata, and though the western does not attain an equal elevation, it contains several of the loftest peaks, and the country covered by these ranges is the most fertile. Enclosed between the two ranges, called the Valley of the Desaguadero, is about 13,000 feet above the sea-level. The greatest part of it belongs to Bolivia; only about one fourth of it is within the territories of Peru. This valley is about 60 miles long, and 20 miles broad, and between its limits agriculture and productions are noticed under BOLIVIA, vol. v., p. 86.

Between 14° and 15° S. lat., the two chains of the Bolivian Andes are connected by a transverse ridge, the mountains of Villacoto, which do not attain the elevation of the eastern Bolivian Andes, but appear not to be inferior in height to the western chain, as several of their summits are always covered with snow. The limit of perpetual congelation on this chain, according to Pernot, occurs at 15,000 feet.

The summit above 15,000 feet of the Bolivian Andes, between 14° and 15° S. lat., should be considered as forming the boundary-line between the Bolivian and Peruvian Andes.

The Peruvian Andes consist of two chains, which run in the same direction as the Bolivian Andes from south-east to north-west, and may be considered as their continuation. The western range runs parallel to the Pacific, nearly north-west between 15° and 18° S. lat., and the eastern chain is also nearly north-west, forming a continuous chain, without any break, and generally rises to 14,000 or 15,000 feet above the sea-level; only a few of its summits rise above the snow-line, and these elevated points are most numerous at the southern extremity, where the chain is most connected. The summit of the range, which is called la Chiquinquirá, attains nearly 22,000 feet of elevation, and exceeds in height the famous Chimborazo. South of it, and completely isolated, is the volcano of Arequipa, the summit of which is 17,200 feet above the sea, but it is not always covered with snow. Farther north-east are the elevated summits called Cerro de Huando and Cerro de Parinaochea. South-east of Lima is the Toldo de Nieve; between 1° and 10° S. lat. is the elevated summit called La Viuda, which rises to 15,968 feet; and north of it occur four snow-capped summits, the Altn Chagua, which rises several thousand feet above the snow-line, and the Nevados de Pelagatos, of Moysapoa, and of Huayllal. The last-mentioned mountain is 17° S. lat., and north of it there are no snow-capped mountains until we come to Chimborazo (2° S. lat.). The mountain-mass north of the Nevado of Huayllalas seems to descend to an average height of 9000 or 10,000 feet.

The eastern chain of the Peruvian Andes, which is the continuation of the eastern Bolivian Andes, runs in its southern part, and as far north as 12° 30' S. lat., parallel to the western Andes, at the distance of about 100 miles. It is composed of numerous and impetuous peaks, which terminate with the Nevado de Salcantali (13° 10' S. lat.) Further north it sinks much lower, and north of 12° 30' S. lat. the chain is interrupted by two large rivers, the Rio Yucay and the Rio Apurimac. On the northern banks of the Rio Apurimac the Andes again rise to a great elevation, though, so far as is known, in no place do they ascend above the snow-line. They gradually approach near
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 the Rio Ucayali, a distance of some 150 miles from the ocean, and passing near the eastern end of the salt marshes of the Rio Orellana, we find the Río de las Nieves, which runs parallel to each other to 7° 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. It is here that the parallel, which is about 50 miles distant from each other, but near 5° S. lat. they are 120 miles apart. In the northern portion of the eastern chain there are a few snowy peaks, as the Paramo de Caraca (near 7° S. lat.) and the Paramo de Pacaya (north of 7° S. lat.).

The country included by these two ranges contains four regions, which differ materially in climate and productions. They may be called the table-land of Cuzco, the valley of the Rio Ucayali, the table-land of Pacso, and the valley of the Marañon.

The table-land of Cuzco extends from the mountains of Vilcanota, its southern boundary, to about 12° 30' S. lat., or more than 150 miles from south to north, and about 100 miles from east to west. Its surface is very uneven, being traversed by several ridges of broad-backed hills rising with a tolerably steep ascent, and running from the south, where they are connected with the mountains of Vilcanota, towards their northern extremity, where they are separated by a more or less depressed area, which has been called the Valle de la Serna, which encloses 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 northern border, where the level of the sea is 11,300 feet above the sea-level. We may reasonably infer that the districts south and west of that place are more elevated. But the rapid course of the numerous rivers which descend northward, shows that this plain lowers rapidly towards the 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 quinua, which is the grain of the plains of the Valley of the Desaguadero. [BOLIVIA, vol. v., p. 87.] In the parallel of Cuzco the climate is favourable to the growth of wheat, Indian corn, and the fruits of Europe, but the last requires 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° 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 among montane grass. We are not acquainted with the climate of this region, except by the experience which we have derived from the parallel of the Andes in the latitude of 7° S. lat.; and the climate is undoubtedly that of the plains of the Marañon. The Vale of the Rio Marañon is the principal branch of the Amazonas. In the southern district is the lake of Chinchaycocha, of large dimensions, from which a river issue, which is kept in course by a series of lakes, the last of which is the Lake of Ucayale. The climate of the Vale of the Rio Marañon is probably a high, dry, and cold one, as it is the most northern part of the range of the Marañon; and it is not improbable that the Pongo de Rencenas, which is only 1250 feet above the sea, is the lower part of the vale, 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 the valley, and in several places within a short distance of the river. This vale 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 sandy plains of some adjacent mountains, Indian corn, mandioca, plantains, and yuccas are 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 Jurua, it has been little visited by modern travellers.

On the west side of the Peruvian Andes, the region of the tropical productions 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 of this region are not numerous; the principal are plantains, bananas, manioca, yams, canones, and the sugar-cane. The principal fruits are grapes, anonas, pineapple-aples, pawpaws (enraca), and cherimoyas. Above this region is the western end of the Andes, which at the Pacific reaches to 10,000 feet, and in the valleys to 12,000

14,000 feet above the sea-level. As the snow-line in this part of the Andes seems to occur about 13,500 feet above the sea, the surface of the table-land is only 1500 feet below the snow-line, and which remains uninhabited 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 the mean temperature of the most northerly points of England. The climate is 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 scarce is the time when the thermometer registers frost, at which time the thermometric 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 clouds accompanying a strong wind, or with a storm caused 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 mornings are frequently cold, and the sky is usually filled with clouds, and sometimes a little snow falls. 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, where the herds, which are kept in considerable 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.
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; the latter is grown at a height exceeding 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 somewhat farther south, between Arequipa, &c., to the valley of the Desaguadero, and are named from the mountain-passes through which they lead. The most southern is the Pass of Las Guayllas (17° 56 S. lat.), which is 14,670 feet high, and a little farther north (17° 45'), is another pass of the same name, the highest part of which is 14,200 feet. The Pass of Chullunquani (19° 18' S. lat.) is 15,600 feet high. The lowest and most frequented pass in these parts is that of the Alto de los Huessos; it runs as far as Arapiqua, and it is said that it is the Andes (16° 21' S. lat.) it is only 15,373 feet high. The Pass of the Alto de Toledo (16° 2') rises to 15,529 feet, and the Pass of Lagunillas (15° 22' S. lat.) to 15,613 feet. The lowest pass is that of El Cajas, where the mountains of Vilcanota cross the Western Andes. A mountain-pass leads over the mountains of Vilcanota from Santa Rosa, in the valley of the Desaguadero, to Cuzco. With 17° 56' S. lat., it is more than 2600 feet above the level of the Andes north of 15° 30'. A pass leads from Lima to the town of Huancabamba, the highest point of which is 15,080 feet above the sea-level. Farther north is the pass called Portachuela de Tacoto, through which the road from Lima to Tarma passes; it is 15,750 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 15,175 feet high, and also that of the Alto de Lalagual, which rises to 15,460 feet. To the west, the table-land of Pasco to the valley of the Rio Huallaga does not exceed 14,000 feet, and runs in a ravine of the table-land. A road leads from the town of Trujillo to Cajamarca, in the vale of the Marañón, which in the Pass of Mucumipampa is 11,604 feet above the sea-level. From Cajamarca 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 is that of the Eastern Andes, where the mountain passes close to it where it attains the elevation of 10,500 feet above the sea-level.

III. The Eastern Region comprehends the eastern declivity of the Andes, which is not far from the coast of Peru, and is designated as the coast-Andes. It is the least 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 Marañón, being separated from it by the Eastern Andes. It extends from 16° 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. Huancayo is about 9000 feet above the sea-level, but at 9° 30' S. lat. the valley 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 valley. When the river ascends at an angle of 35° 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, but at the western boundary of the valley is formed by a range of hills, which south of 5° 30' S. lat. probably do not fall short of 10,000 feet above the sea-level, and between 7° and 6° 30' S. lat. rise to a considerable elevation. These two points they are of moderate height. 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 most luxuriant growth of forest. The climate of this part of the coast is, however, hot habituated, though the population of late is said to have 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 covered with thick growth of tall trees, which in some cases 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 a lower part, Indian corn, two sorts of plantains, and two sorts of bananas are cultivated. There are also plantations of sugar-cane, coffee, cacao, and cocoa. The cacao 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 are 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 destitute of trees, and hence it was supposed that this part 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 soil of the vale of Huallaga is not level, and the vale of the Rio Ucayali is not level. There are valleys 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 Pachitea, the river having its mouth in the Gualaceo, 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 not sufficiently acquainted with its climate and productions. It does 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, but it is less favored by forest tribes, of which a small number have embraced Christianity.

The country extending from the eastern banks of the Rio Ucayali to the river Yavarí, 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 appearance. The rivers descend on the east, until they 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 westward as far as the vale of the Andes, but towards the Ucayali sink into hills. The country along its banks seems to be rather flat; it is said to be entirely covered with forests, except in the highest summits of the mountains.

Peru.—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, and accordingly they are not navigable. The only use that may be made of these rivers is the use of light 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 rivers, 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, and the Huallaga take their rise in the table-land of Pasco, and runs north-north-west about 150 miles in a narrow valley, and with great rapidity. In this distance it descends not less than 10,000 feet. It then flows...
in a wide valley for more than 250 miles to the Pongo of Rentena, and in this valley its course is rather gentle, as it descends only from about 3000 to 1223 feet. It is navigated by balsas and canoes. Near Tomependa is the Pongo of Rentena, a rapid. From this place the river turns to the east, flowing through a basin attached to the Andes in the direction, it turns to the east; after a course of 70 miles more it descends into the plains by the Pongo de Manse- riche, a rapid about seven miles in length. Between the Pongo de Rentena and Manseriche the river runs between lofty rocks, which rise to the height of 1000 feet, and never sink below 40 feet. It is full of cedars and rapids, and can only be navigated by canoes. At the foot of the Pongo de Manseriche is the town of Borja (in Ecuador), from where the river is navigable for 40 miles, less than not more than seven miles. After its union with the Hual- lagal and Ucayali its depth is so much increased that it is navigable for the largest vessels.

The Ucayali, which joins the Marañón near 3° 8' lat. and 76° W. long, rises in the lake of Quilincoucha, which is also on the table-land of Pasco, south-east of the lake of Lurincocha. It runs more than 500 miles. The southern half of its course is north-north-west, and the northern half north-north-east. The upper part of its course forms the tributaries of rapids, which however may be descended, though not ascended. These rapids cease at Juan del Rio, south of 9° 8' lat.; and the river, though rapid, affords an easy navigation from 9° 8' lat. to 8° 6' lat. where rapids again occur. There are no rapids between 7° 30' and 6° 40' lat. Further north occur the last rapids, which render the river nearly navigable for about 30 miles. North of 6° 20' lat. the Ucayali flows through a level marshy plain to its junction with the Marañón, and is navigable for vessels of considerable size.

The Ucayali brings to the Amazonas the drainage of the mountain-region situated between 11° and 15° S. lat. This large river is formed by the junction of the rivers Urmamba and Tambo, which takes place near 9° S. lat. The Uru- bamba is formed by the union of the rivers Paeacaramba and Quillabamba, which drain the eastern portion of the table-land of Cuzco, and running north, meets the north-east of 8° 5' S. lat. These rivers are too rapid to be navigable, but the Urumamba is stated to be navigated by the natives. The Rio Tambo is formed by the confluence of the rivers Apurimi and Mantaro. The Apurimi, which drains the western portion of the table-land of Cuzco, unites with the Mantaro, which drains the valley of the Jauja, and in its upper part is called Rio Jauja. [APURIMAC.] These rivers do not appear to be navigable. The Tambo, which is formed by the confluence of two quickly navigable streams from a country in which no European settlements have been formed. Not far below the place where the Urumabamba and Tambo by their union have formed the Ucayali, is a great rapid or cataract called Vuelta del Diablo. From this point to Cuzco, a distance of 600 miles, the river runs north-north-west, and afterwards north-north-east, and no impediment to navigation occurs in this part of its course. It is navigable for large vessels. Among its chief tribu- taries is the Rio Pachites. This river originates on the eastern declivity of the mountains which enclose the upper vale of the Hualagala on the east near 16° 8' lat., and runs first east and then north, falling into the Ucayali near 8° 30'. As nearly as the whole course is free from impediments to na- vigation, it has been supposed that it might be used as a channel for the exportation of the produce of the eastern districts of Peru, in preference to the Hualagala, the course of which is interrupted by many rapids and cataracts; but as nearly as the Pachites are inhabited by native tribes who are in a state of continual enmity with the whites, it has been found impossible to establish a regular navigation on it.

 Productions.—The trees and plants which are objects of cultivation have been already enumerated. The forests, with which the mountain-region and the eastern country are covered, supply several articles for commerce and for domestic use, such as vanilla, sarsaparilla, copaiba, caout- chouc, and various gums and resins; also various kinds of barks and woods, used as dyes, such as Brazil-wood, log- wood, mahogany-bark, and anatto. The indigo plant grows spontaneously. Jesus's-bark is met with in several places on the banks of the river. There are also several kinds of lofty trees, useful as timber or for cabinet-work, as mahogany and cedar.

Domestic animals are far from being abundant in Peru. 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 labor or for meat, and are occasionally driven down to the loads of a mule. Cattle are abundant in the mountain- region, where the declivities supply extensive pasture- grounds; and in some places sheep abound, especially where the situation is too cold for cattle.

Nearly all the wild animals 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, and many more which are to be found in the pampas. 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 fishing 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 the Amazonas near the mouth in the province of Pando. The oil extracted from the eggs of the turtle is an article of export under the name of manteca. Alligators are numerous in these rivers, and they are often thirty feet long. The Peruvians use them for food.

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 francs; but at present it probably falls short of half that sum. There are quicksilver-mines near Huancabelli, 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 a salt of soda, and is found at the banks of the Rio at Point Salinas, and in Sechura Bay, where there are sal- 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 expen- sive.

Inhabitants.—No census having been taken, the popula- tion is vaguely estimated at 1,800,000, composed of creoles, descendants of Indians, and purely native tribes. The greater part of the eastern region is in possession of independent tribes, and only those natives who inhabit the vale of the Huallagala have been converted and subjected to the government of the whites. The number of the Peruvians is not known. The whole is estimated at near 1,000,000; the remainder are a mixed race, the offspring of Europeans and Indian women.

The Peruvian Indians inhabit the Valleys 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 Tucumán in La Plata, 27° S. lat. The Peruvian Indians had attained 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 artifi- cial road which extends from Bogotá to Quito, and thence southward over the valley of the Desa- gadero; 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 naves over the fields, and by the judi- cious manner in which the water was distributed. It may be said that their condition has been improved by the con- quest, inasmuch as they acquired iron-implements and domestic animals to assist them in their agricultural labour; but they have not been benefited in any other respect. 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 make extensive use of muslin and of cotton fabric. 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 tall, slender, and fair. They are farmers, and sail with their bark canoes along the coast 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 civilisation to the Europeans. They are divided into several tribes, the banks of the Huallaga, and on the western are the Cholones, Sharras, and Ibitas. They all seem to belong to one nation, as they speak one language, called the Ibita, though most of them are divided into several tribes. The cultivation of their 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 circumstance of their country not being exactly in the same direction as any other part of Peru. The town of S. Miguel de Puira, 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 north of the district which produces of a considerable 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 Huancacho is an open roadstead. The streets of Truxillo are wide and regular, and it has a fine cathedral and a handsome town-hall. The principal articles of export are bullion, sugar, and rice. Population 9000. The valley of Chimu contains the ruins of a large Indian town. In the vale of the Marañón the town is the capital of Caxamarca and Chachapoyas. Caxamarca stands on the eastern declivity of the Western Andes, in a region nearly level, and contains 7000 inhabitants and the ruins of a palace of the Incas. Cotton and woolen cloth are manufactured to a considerable extent, and also many utensils of tin. Much tobacco is raised in the neighbourhood. In the vale of the Rio Huallaga the towns of Moyobamba and Tarapoto. Moyobamba, near the eastern declivity of the Eastern Andes, which lead to the vale of the Rio Huallaga, and contains the towns of Moyobamba. Much tobacco is raised in the neighbourhood.

2. The department of Junin was formerly called Tarma, from the principal town, but the name was changed to commemorate the battle gained by Bolivar on the plain of Junín on June 7th, 1824. It is bounded on the north by the Rio Marañón, and on the south by the Rio Marañón, and the upper vales of the rivers Marañón, Huallaga, and the table-land of Pasco. Besides the fertile valley of the Rio Nepeña, which contains the towns of Huambocho and Nepeña, the last-mentioned town seems to be a place of some size. They export their produce, sugar and grain, from the excellent harbour of Samancos or Huambaco. Farther south is the town of Guarmar, in a country which is covered with lofty trees, whence great quantities of fire-wood are sent to Lima. It has only from 500 to 600 inhabitants. The small towns of Barranca and Supé export their agricultural produce to Lima from the bay of Supé. In the upper vale of the Marañón is the town of Huari, with 7000 inhabitants, and Caxamarca stands on the table-land of Pasco. Pasco or Cerro Pasco is built on the table-land of Pasco, 14,275 feet above the sea-level.

On the eastern chain of the Andes, in a district called Huamalas, a great quantity of Jesuit’s-bark is collected. There are a number of canals in the province, which is very small, and that of the Indians very great. There are numerous coast settlements, built on the seashore, on the banks of the Marañón, which contains 75,000 inhabitants, and is a place of much business, as communication with the interior is carried on by means of small boats, called balsas, 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. They are more probable that all these tribes are not known, even by name. South of 12° S. lat., on the east of the Andes, are the Chanchos and Tuyoneres. The Aantes inhabit the country where the rivers Chiquimba and Quibumbas between 12° and 11° S. lat. is between 15° and 11° S. lat., and as far north as 9° S. lat., are four tribes, the Tampas, Palutúniques, Chuantagua, and Piros. The country on both sides of the Pachites river is in possession of the numerous and warlike tribe of the Atarucos, which mining operations of government permit strangers to enter the country. They have advanced as far north as 8° S. lat. North of them, between the Huallaga and Ucayali, are the Conibos, Setebos, and Shipibos. In the middle of the small tribes, the Barbas and Penuinas. Between the Ucayali and Yavari are the Amaçuamas (between 9° and 8°), the Remos (between 8° and 7°), the Sencis and Capanganas (7° and 6°), and the mayor population of the Mayurunas, which occupy the country to the west of the Penuinas. The two banks of the Ucayali, both banks of the Ucayali speak one language, or dialects which differ very little from one another. This language is called Pano. Some of these tribes have been partly converted to Christendom, as the Conibos, Setebos, and Shipibos, 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 Chanchos, Aantes, Remos, and Sencis; but the Ucayali and Urumbas to the confines of the Pucaranbas and Quilabamba, 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, Júnín, Lima, Huancaabes, Ayacucho, Cusco, 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 back of the country thinly inhabited. This department is on the north of Santa (near 9° S. lat.), the lower and wider portion of the vale of the Marañón, 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.
contain rich ores. The houses are low, and some have small glazed windows; but the suburbs are merely a collection of huts. The coffee-producing country is not the most picturesque; but there are some trees that give an overwhelming impression of yellow. In the upper vale of the Rio Huallaga, north-east of Pasco, is the town of Huanuco, with 9000 inhabitants. It is the centre of the country's coffee production, and in the Vale of the Urubamba, near the city of Cuzco, it is the centre of the country's agricultural production. In the neighbourhood there are ruins of considerable extent. In the vale of the Rio Jauja is the town of Tarra, with 6900 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′ S.), and comprehends that part of the maritime region in which the valleys of the Rio Lurin and the Huáscar are situated.

4. The town of Huanavallesia 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. The salary of the miners is up to 800 soles per month. Huanavallesia has 5000 inhabitants. Nothing is cultivated in the neighbourhood.

5. The town of Ayacucho received its name from the plains of Ayacucho, on which General Sucre, on the 9th of December, 1824, defeated the troops of the viceroy of Peru, and put an end to the Spanish power 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: whites are only found in the town. The capital is Huamango, a large place with 26,000 inhabitants, founded by Francisco Pizarro, in an elevated situation, on the declivities of some mountains of moderate elevation above its 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 ecclesiastics. 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. Some miles north-west 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 departments the coffee is extensively cultivated. Besides the capital, Cusco, or 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 near the base of the mountains; they belong to this department, and border on the country of the Chunchos Indians.

7. The department of Arequipa extends along the coast of the sea from Point Sama (17° 30′ S. lat.) to Point Sama (18° S. lat.), and inland to the declivity of the western Andes. It contains a smaller number of valleys than the department of Lima, but several of them are extensive, especially that of the Rio Chancay or Arequipa, in which the town of Arequipa stands. The commercial products consist chiefly of wool and cotton. There are no other valleys than in any other department except Lima. Acairi, not far from the boundary of the department of Lima, is built in a plain abounding in fertile land, 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.

8. The plains of Arequipa are much inferior in fertility to those of the coast north-west of the city of Arequipa, and the town stands on a barren tract which divides the valleys much salt petrol 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 the town of Cuzco, which contains a population of about 3000 souls, who live in low buildings of sun-dried bricks. [Arica.] It is the port of Tacna, a town built in the same valley about 30 miles from it, and containing 7000 souls. It is the seat of the capital of the department of Puno and the greater part of the republic of Bolivia. Tacna contains 7000 souls and several well-built houses. Yquique (20° 12′ S. lat.), with a bad roadstead, has only 1000 inhabitants; a considerable quantity of salt petrol is collected here. Nearly opposite to Tacna, on the side of the valley of the Desaguadero, are the towns of Puno, the capital of the department, which has a population of 9000 inhabitants, and Chucuito, with 5000. In the vicinity of Puno are numerous silver-mines, which in 1893 yielded 96,288 marcos of silver, but since that time the produce has fallen off.

In the countries of the independent tribes there were formerly several missions, 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, on a flourishing state, that of Sarayacu, on the Rio Ucayali, near 7° S. lat., where about 2000 individuals of the tribes of Puinasa, Setebos, Conibis, Shipebos, and Sencis live in scattered houses, and seem to advance, though slowly, in civilization.

Manufactures.—The Peruvian Indians consume a very large proportion of European manufactured articles. Their dress is composed of cotton or woolen stuffs made at home, or in several instances bought of a town near or far from the plains 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 cordovan leather, and silver and brassware and soap-house. The iron utensils, axes, saws, and hoes, are made of copper, and the maces, 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 carriage-roads in the interior. Commerce is 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 north to south, one from Truxillo to Caxacu, another from Chachapoya to Moyalamba, and a third from Tarapoto to Lurin and Oruro in Bolivia. The goods imported from foreign countries are sent by these roads into the interior of Peru.

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 salt-pepper, the quantity sent to different countries of Europe being very great. Cotton, tobacco, Indian corn, rice, salt, and spirits are minor articles. 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 silk goods and other articles.

The principal harbours from which the exports are made, are Paita, Lambayeque, Callao, Iquique, Ilay, Arica, and Iquique. We have no recent account of the commerce of these harbours, in which probably three-fourths of the exports are shipped. The three last-mentioned harbours are called puerros intermediarios, 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. In 1834, not less than 148,150 cwt. of salt-pepper were shipped, of which more than 100,000 was on account of British merchants. The value amounted to 125,000l. The number of European vessels which entered the port of Arica in 1834 was 63, 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 2971 tons. The other European vessels were from Antwerp, Hamburg, Cadiz, and Genoa. The vessels from Chile and other parts of Peru were 25 in number. They exported bullion and specie to the amount of 320,301 Spanish dollars, equal to 72,621l.; bar to the value of 175,559 dollars, or 39,604l.; wool to the amount of 18,955 dollars, or 4114l.; and wool to the amount of 13,222 dollars, or 2984l.; chinchilla and vicuña skins, hides, and cotton were among the minor articles of export. In the same year the general usage of pepper was carried by the Bolivian part of the valley of the Desaguadero and shipped at Arica. The value of all the exports of Arica does not exceed 150,000l. The exports of Ilay in the same year amounted to 86,590 dollars, equal to 226,507l., viz.:

<table>
<thead>
<tr>
<th>Item</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salted</td>
<td>776,000</td>
</tr>
<tr>
<td>Silver</td>
<td>124,503</td>
</tr>
<tr>
<td>Bark</td>
<td>110,872</td>
</tr>
<tr>
<td>Veuca wool</td>
<td>45,000</td>
</tr>
<tr>
<td>Sheep wool</td>
<td>73,070</td>
</tr>
<tr>
<td>Copper</td>
<td>2,900</td>
</tr>
<tr>
<td>Rattia</td>
<td>3,945</td>
</tr>
</tbody>
</table>

1,183,590

The exports of the puertos intermediarios, shipped for Europe and the United States, amounted therefore to 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 2,000,000l., exclusive of the commerce with Mexico, Central America, and Chile. But it must be remembered that a great part of the exports of the puertos intermediarios is brought from Bolivia, as the silver, bark, vicuña and sheep wool, and cotton.

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 clothed, and lodged in comfortable houses. Their fields were well cultivated, and their villages were encircled by the water of the small rivers to a considerable distance for the purposes of irrigation. They had extensive manufactures of earthenware and woollen and cotton cloth, and also tools of iron. The distant provinces showed the advanced forms of their utensils, made out of the hardest rock with the most curious 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 which disappeared into the forests of the east, show that 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 communication with the Nasca or the Susna civilization. The produce of the Peruvians was limited to coasting from one small harbour to another in balsas. The difference in political institutions and in the usages of society between the Peruvians and Mexicans precludes the supposition 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 arrived there they got possession of the country untrammled into its history, and learned the following traditions:

About three centuries before the arrival of the Spaniards, Manco Capac and Mama Ocloo appeared on the table-land of the Desaguadero, with some 4000 men, of whom 2000 were 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 savage tribes submitted, being considered as being these beings of a divine origin, who taught them the first 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 was to continue to the descent of the castes of the Hindu. 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, excused absolute and uncontrolled authority: disobedience to their orders was considered a sin and violation of the commands of the Supreme Being. His successors gradually extended their authority over the whole of the mountain-region between the equator and 25° 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 were easily led into the path of order and peaceably submitted to any government. When the Spaniards first entered Peru, the twelfth monarch from the fourth of the state, named Huayna Capac, was said to be seated on the throne. He had violated the ancient usage of having a monarch to marry a woman not a descendant of Manco Capac and Mama Ocloo. His wife was a daughter of the vanished king of Cuzco, 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 Huascar, 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 Cape Parma and Cape Aguja. Landing at Tumbes 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 and built three small Spanish towns. The most important of these was called Piura, the oldest Spanish settlement in Peru. The distracted 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 the contest, they were easily compelled to submit to a foreign yoke. In many instances during the
progress of the conquest (from 1532 to 1534), Pizarro acted with cruelty and perfidy, but he undoubtedly possessed great personal abilities. All the larger towns of Peru were built by Pizarro, with the exception of Cuzco, which was founded by Manco Capac. Pizarro built Puara, Truxillo, Lima, Arequipa, and Huamanga.

The disorders which immediately followed the conquest were, in a great measure, the result of the country's circumstance which determined the court of Spain to make Peru the chief seat of the Spanish dominions in South America. Lima was chosen for the capital, and it soon rose to such splendor that it was called the City of the Kings. The author of this greatness was that Spaniard who took deeper root in Peru than in any other of her South American colonies. In 1785 the Peruvians took up arms against the Spaniards, under Tupac Amaro, an Inca, but after a northern, and a southern, and a k Sepoy's attack, 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 neighboring provinces had already expelled the Spanish armies, and others were attempting to do the same, the Spaniards remained in undisturbed possession of Peru until 1820, and even then the first impulse to rebellion came from within. General San Martin had collected a force in the provinces of La Plata, with which, to which he returned, and, after a successful war, expelled the Spaniards from that country. In 1820 he came with an army from Valparaiso to Peru, and as soon as he had obtained possession of Lima, the independence of Peru was declared, the 6th of May, 1821, and San Martin was also proclaimed protector of Peru. The Spanish viceroy Canterac, who had remained in possession of the Montañas, gradually recovered the Viceroy, the King had been deprived of his authority into the hands of the legislature on the 19th of August, 1822. On the 1st of September, Bolivar, the Colognian general, entered Lima, and continued the war with Canterac, but at first with doubtful success. In November, San Martin adopted, but the Congress, being unable to maintain its authority, dissolved in February, 1824, and Bolivar was made dictator. After some advantages gained by Bolivar over Canterac, and over San Martin on the 4th of December, 1824, in the plains of Ayacucho, by which battle the authority of Spain in Peru and South America was annihilated. General Redil threw himself with 800 men into the fortress of Callao, which he surrendered, after a siege of more than thirteen months, on the 29th of January, 1826. In February, 1825, Bolivar had resigned the dictatorship, but he had previously contrived to separate the south from the north, and to convert the former into a new republic, which adopted 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. To terminate 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 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 president of the republic, who is elected by the two houses, is chosen for four years, and he cannot be re-elected. He is assisted in the administration of the public affairs by a minister of his choice, and by a state council, which is elected by the legislature. The judicial power is independent of the executive and legislative. All the justices of the peace, and the judges of the District and Superior Courts, are appointed by the president, but the Supreme Court is elected by the legislature. 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 REMAINING PARTS of the book are not visible. However, Peru has experienced, even more than the other parts of America which were subject to Spain, the bad effects of having adopted a constitution unsuited to the state of the country. The great struggle which is going on in both republics which are struggling for power, and by civil wars and revolutions produced by these continual struggles. In 1835 four chiefs in arms were contending for supremacy. If one of them succeeded in making himself powerful, the others would unite against him; while, on the contrary, than they were again disunited and in hostility to each other. In 1836 the four southern departments, Cuzco, Ayacucho, Puno, and Arequipa, separated from the four northern, and Cusco, and gave the latter 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.

(Peru's Voyage to South America; Humboldt's Personal Narrative, etc.; Meyen's Reise um die Welt; Papeg's Reise in Chile, Peru, etc.; Smyth's and Lavois's Narrative of a Journey to Lima to Peru; Narrative of the Surveying Voyages of the Adventure and Beagle; in the London Geographical Journal, vols. v. and viii.; Miller, in the London Geographical Journal, vol. vi.)

PERUVIAN ARCHITECTURE. Remains of ancient Peruvian buildings in the valley of Cuzco and in the provinces of South America, from the equator to 13° S. lat., especially over the Montañas. They are characterised by simplicity, symmetry, and solidity. There are no columns, pilasters, or arches, but the walls are of uniform thickness and a complete want of all exterior ornaments.

The great road of the Incas, which runs from Quito to Cuzco and the table-land of the Desaguadero, is made of enormous masses of porphyry, and it is still nearly perfect in several parts. Bolivar invented a Peruvian cutting instrument, which was found in a mine not far from Cuzco: the material consisted of 54 parts of copper and 6 of tin, a composition which resembles that of the Chinese chisel. 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 cases, it is composed of cemen
tum. The stones are all parallelopipeds, and worked with such exactness that it would be impossible to perceive the joining of their exterior surface were quite level; but being a little convex, the junctures form slight depressions, which are filled up with the cement. Doors, not widened, are perpendicular. The height of the buildings is from 7 to 84 foot high. The sides of the doors are not parallel, but approach each other towards the top, a circumstance which gives to the Peruvian doors 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 antients remaining within the boundaries of the present republic of Ecuador. Near the ridge called Chisiche, 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 Ayavouy is a building called the Temple of Tulluc, consisting of a wall of very large stones, about 3 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 is placed, on the west side of 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 the only opening in the wall. There were no walls.
P E R

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 Perugia. The provincial capital of Perugia is entirely in the basin of the Tiber. 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 10 miles, and the greatest depth of water is 90 feet. The lake is bordered by two small islands; one of which is called Isola Maggiore and the other, called Isola Minore. These islands are connected with the mainland by a bridge, which is called the Ponte del Lago. The climate of Perugia is healthy, and the scenery is very picturesque.

The province of Perugia is divided into four districts: Perugia, Città di Castello, Spoleto, and Todi. The province of Perugia is bounded on the north by 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 Perugia. The provincial capital of Perugia is entirely in the basin of the Tiber. 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 10 miles, and the greatest depth of water is 90 feet. The lake is bordered by two small islands; one of which is called Isola Maggiore and the other, called Isola Minore. These islands are connected with the mainland by a bridge, which is called the Ponte del Lago. The climate of Perugia is healthy, and the scenery is very picturesque.

The province of Perugia is divided into four districts: Perugia, Città di Castello, Spoleto, and Todi. The province of Perugia is bounded on the north by 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 Perugia. The provincial capital of Perugia is entirely in the basin of the Tiber. 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 10 miles, and the greatest depth of water is 90 feet. The lake is bordered by two small islands; one of which is called Isola Maggiore and the other, called Isola Minore. These islands are connected with the mainland by a bridge, which is called the Ponte del Lago. The climate of Perugia is healthy, and the scenery is very picturesque.

The province of Perugia is divided into four districts: Perugia, Città di Castello, Spoleto, and Todi. The province of Perugia is bounded on the north by 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 Perugia. The provincial capital of Perugia is entirely in the basin of the Tiber. 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 10 miles, and the greatest depth of water is 90 feet. The lake is bordered by two small islands; one of which is called Isola Maggiore and the other, called Isola Minore. These islands are connected with the mainland by a bridge, which is called the Ponte del Lago. The climate of Perugia is healthy, and the scenery is very picturesque.

The province of Perugia is divided into four districts: Perugia, Città di Castello, Spoleto, and Todi. The province of Perugia is bounded on the north by 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 Perugia. The provincial capital of Perugia is entirely in the basin of the Tiber. 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 10 miles, and the greatest depth of water is 90 feet. The lake is bordered by two small islands; one of which is called Isola Maggiore and the other, called Isola Minore. These islands are connected with the mainland by a bridge, which is called the Ponte del Lago. The climate of Perugia is healthy, and the scenery is very picturesque.
300 and 400 students: it has a library of 30,000 volumes, with some valuable MSS., among others a Stephen's illuminated manuscript, and a collection of antiques 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. Such famous names as Piero di Cosimo, and the city's palaces, such as the Marquise Monaldi, Bacion della Penna, Count Stappa, Oddi, &c. Perugia has a school of music, two theatres, a dramatic academy, a casino, or assembly-room for the nobility, and a literary cabinet or club. When Perugia has long 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 Verginioli. The Biographical Sketches of Perugian Painters is also a published catalogue of writers who have illustrated the history of its native city; 'Biblioteca Storica Perugina, 4to., Perugia, 1853. Odditi has written 'Athenaeum Augustum in quo Perusinorum Scripta publice exponuntur,' 1673. Passeri has written the lives of the native artists: 'Vite dei Pittori, Scultori, ed Architetti Perugini,' 4to., 1732. Brandoni has given an account of the works published at Perugia in the first century of the invention of printing: 'La Tipografia Perugina del secolo XV. illustrata,' 8vo., 1807. Verginioli 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 collected in a book by Pasquino. Verdi has given an account of the modern works of art by Mariotti and Morelli. 'Pitture e Sculture della Città di Perugia,' 1865, besides the common guide-books. Among the contemporaneous learned men of the city are the learned Cav. Antonio Grazzini, professor of grammar, and Michelangelo Vannucci della Pieve, a celebrated translator of Pindar and professor of Greek literature, Canali (professor of physics and rector of the university), Colizzi (professor of law), and Antinori (a poet and professor of Italian literature). Deserbo has written on the history of Perugia. Passeri has published two burlesque poems, Coppetta and Caporalii, the latter of whom is considered by many as equal to Berni.

The population of Perugia, including the suburbs, is 15,000 (Calendri); in the time of its independence, in the sixteenth century, it was reckoned 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 great works of art, works of art, where the principal trade consists in the products of its fertile territory, corn, oil, wool, and cattle.

Among the many churches of Perugia, said to be above one hundred, the most remarkable is the Duomo, the cathedral, in the Gothic style, with some good paintings by 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. 1. The church of S. Francesco was plundered of the 'De Scents from the Cross,' by Raphael, at an earlier date, by Paul V., and this picture is now in the Borghese Gallery. 2. Bonaparte, when he converted it into a church, 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 K. It is said that Perugia in 1504, is remarkable for its sculptures. Descriptions of each of these churches are published.

The town-house, 'Palazzo dei Priori,' a vast Gothic building, and the residence of the delegate and of the municipal authorities, contains many interesting archives. There are some curious documents of the middle ages. The old exchange, 'Sala del Cambio,' is adorned with beautiful frescoes by Perugino. The square before the cathedral contains a fountain with sculptures by Giambologna and da Pisa. In the square 'Del Papa' is the bronze statue of Julius III. seated in a chair, cast by Vincenzo Danti of Perugia. The Place Gramina has a handsome gate, said to be of Etruscan construction, but called the arch of Augustus. The castle of Assisi, built by Guido of Pisa, is a collection of urns and sarcophagi, and the materials of an ancient temple. For the Etruscan remains, 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, including the remains of a new road. ('Communication from Perugia, Jan., 1840.)

Perusia was one of the principal cities of ancient Etruria, but it seems to have been built before the Etruscan dominion by a colony of Umbrians, Sarsini, early in the 8th century. In an Etruscan inscription in the Museum Oldii it is called Perusici. Perusia noted 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 Arretium and Tusculum, was attacked and occupied by the Romans (Livy, x. 31. 37.) In the second Punic war, Perugia 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 Lucius Antonius, brother of Marcus the Triumvir, stimulated by Fulvia, his sister-in-law, having quarrelled with Octavian, and being defeated, shut himself up in the town of Perugia, 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 Perugia, and gave up the town to plunder. Perusia was on that occasion nearly destroyed by fire. It was afterwards rebuilt, under the name of Perugia, and again destroyed 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 factions, and was overthrown by the Lombards. It was last submitted voluntarily to the rule of Braccio da Montone, one of the best and wisest chieftains of the middle ages. After his death, the government passed through the hands of several of his relatives, mastership to that of the family of Baglioni. Giovanni Paolo Baglioni, being seized at Rome by Pope Leo X., was beheaded on some political charge. His descendants however governed Perugia for some years after, until Pope Paul III. united it to the Papal States. Then at last it was placed under the rule of Pope Sixtus IV. in the Sixtine chapel at Rome: only one or two of these now remain, the greater part having been destroyed to make room for the Last Judgment of M. Angelo in the time of Paul III. The Dead Christ, and other figures so much praised by the monks of Santa Chiara at Florence in 1455. Francesco del Pugliese is said to have bid for this picture three times the original price, and a duplicate by Perugino, but the offer was refused. 'Amore e Virtu' was purchased by the monks of Santa Chiara at Perugia. He afterwards visited Florence again, but, in consequence of a quarrel with the artists there, returned to the city whence he derives his name. He died at Castello di Montefortino, in 1524.

The fame of Perugino has certainly been widely spread by 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 1560. The popularity of the earlier pictures, and therefore the prices which have been paid for them, produced repetition and mechanical execution. Vasari says 'he gave all his figures one and the same air;' it must however be admitted that that 'air' is far superior to the contortions of Vasari himself and his fellow-pupils in the school of Angelico. It must be remembered that such form seems to have been entirely the result of chance, independent of other circumstances. The loggia and small inner court are singularly beautiful, and the whole edifice deserves the attention it has received in a folio work, by Suida and Haufler, expressly devoted to the study of the antique; and after being pillaged of everything reached 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 Massimi, 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.

PESSARO E URBINO, LEGAZIONE DI, a province of the Papal State, is bounded on the east by the province of Ancona, on the north and north-east by the Abrasive, on the west by the province of Forli and the grand-duchy of Tuscany, and on the south by the province of Perugia. The area is estimated at 1749 square miles. (Neigebourg.) The central ridge of the Apennines, which divides the province of Pesaro e Urbino from Tuscany, projects eastward towards the Adriatic in the neighbourhood of Urbino, and sends off several offsets, which run to the seaward, forming the natural boundary between Northern and Southern Italy. The mountain on which San Marino stands is a part of this ridge. The 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 along the boundary between the province of Forli 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 Pisaurum, which rises in the Apennines of Carpegna on the Tuscian 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, and after a short distance enters the Metauro, which comes from the south from the mountains of Gubbio, then turning to the north-east passes by Fossombrone, and enters the sea by the town of Fano, after a course of nearly sixty miles. According to a tradition, which is popular among the country people, the first inhabitant of Pesaro was defeated and killed in a plain called Piano di San Silvestro, above the confluence of the Clitunno, and about six miles south of the town of Urbino. A tower on a hill called Monte d'Elce, on the right bank of the Metauro, is called the sepulchre of Hadrubal. The Flaminian road from Fano crosses the Metauro above Fossombrone, and follows the course of the Clitunno, ascending the Apennines above the Metauro, and crossing the Metauro near the town of Clitunno, above which town is the old town of Guido to Noerca. The next river in the province of Pesaro is the Cesano, which rises in the mountains of Avellana, passes the town of Pergola and the site of the ancient town of Suasa, of which some remains are still visible, and enters the sea north-west of Sinigaglia, after a course of about thirty miles. South-east of the Cesano is the Misia, which enters the sea at Sinigaglia, after a course of about twenty-five miles. The surface of the province of Pesaro e Urbino is hilly; some parts of it are forested, and others covered with well-grown vineyards, generally barren. The lower hills are planted with vines, olive, and mulberry-trees. Good pasture is also abundant. The province is divided into five districts—Urbino, Pesaro, Sinigaglia, San Marino, and Fano. The towns are inhabited. (Serristori.) The principal towns are—Urbino, which is the old capital of the province and the residence of the former dukes. 2. Pesaro, the ancient Pisaurum, a well-built town and a bishop's see, has several fine churches with some good paintings, a fine market-place, several
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 Olivier, a learned man of Pesaro, to his town. Pesaro is a chief centre of the art of the manufacture of silks, pottery and glass, and leather, and about 11,000 inhabitants. (Calindri.) The surrounding territory, which is very fruitful, produces, among other things, excellent figs, and gourds, a vegetable which is abundant in Pesaro. Pesaro is a centre of 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 commerce, a college, and a philosophical and medical seminary. It is the birth-place of Pandolfo Colonnaucchio, a chronicler and poet of the fifteenth century; of Count Perticari, a philosopher and son-in-law of Monti; and of the musical composer Rossini. 3. Fano, the ancient Fanum 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, Raggioamento 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 'cavallino marino,' the head of which resembles that of a horse, and has the pectoral fins attached to it. In the vicinity, the ancient Sena Gallica, is a bustling town with a small harbour, 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 attended by people from all parts of Italy and also from other countries. About 200 vessels, mostly of small burlin, of the various nations which trade in the Mediterranean, arrive at Senigallia at that time, and bring colonial and other produce, and also French, English, and German manufactures. The celebrated singer Madame Catalani, was a native of Senigallia. 5. Fossombrone, situated on a hill about a mile and a half from the ruins of Fano, is about lower than the banks of the Metaurus, is a bishop's see, has several churches and convents, a bridge on the Metaurus, 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 Chiascio, 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 traces of the Jupiter Anxur, on which the Umbri, are visible at Gubbio, but according to Micali, they are to be seen three miles from Chiascarna, the antique Clavinum, not far from the post station of La Schegga in the Apennines, on the high road called the Perlo. In this vicinity were found in an old depository near the Umbri, the seven bronze tablets written partly in Etruscan and partly in Latin characters, and known by the name of the Eugubine 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 Cailis, a Roman colony, on the Flaminian road, has about 3000 inhabitants, and some remains of antiquity. 8. Urbino, which derives its name from pope Urban VIII., is situated on the banks of the Metaurus, has a collegiate church, a manufacture of majolica, or Delft ware, and about 4400 inhabitants. 9. Pergola, on the Clano, has 2500 inhabitants. (Calindri.) 10. The province of Pesaro e Urbino is very interesting for its romantic scenery, its classical recollections, and the numerous remains of antique which are scattered about it. The province of Pesaro e Urbino, which stretches from the Adriatic Sea to the Tiber, is a region of fertile valleys and luxuriant woodlands, with mountains and valleys, and with rivulets and torrents; it is watered by the Metaurus and its tributaries, and is very beautiful.

PESSAUER. [AFGHANISTAN.] PESTH, the greatest commercial town and the most populous city in Hungary, is situated in 47° 30' N. lat. and 18° 15' E. long., on the left or east bank of the Danube, about 20 miles below Vienna. Its trade is extensive and growing, 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.] This ancient town is opposite to a great city of Hungary, containing the fixed portion on the two banks, is 1500 paces in length. The city of Pesth is about seven miles in circumference. It consists of five principal parts—1, the old town, which, though antiquated and irregularly built, contains some fine buildings; 2, the Leopoldstadt; or new town; 3, the Theresienstadt; 4, the Josephstadt; and 5, the Franzstadt—so named after the sovereigns in whose time they were built. Leopoldstadt is now joined to the old town, the walls which formerly contained it 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 building; and the university founded by Joseph II., the building of which was interrupted by the Turkish war (it is not known 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 accommodating 3000 persons; the modern institute for the study of the university. The university was founded in 1635 at Tynau. 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, philology, and mathematics. There are 400 students and above 10000 schoolboys. The university has a library of 65,000 volumes, a cabinet of 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 stands on the Blocksberg, 275 feet above the Danube, and is well furnished with good instruments. The National Museum, which is independent of the university, was founded in 1773. It contains a valuable collection of Hungarian coins and medals, and introduced the Diet in 1608 to endow it. It would take a volume to describe this museum. The collection of coins and medals consists of 1500 specimens, and contains every Roman, and other antique silver medals amount to above 12,000. The gymnasium of the Parista has 800 scholars; and the city normal school (likewise in the convent of the Parista), 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 court and
the capital of the kingdom, Pest is the seat of the high court of
justice, which is the seat of the highest degree of
theatrical and also of the government of the three united
principalities of Pest, Pilis, and Solnok, which contains a popu-
lalion of 400,000 inhabitants. The manufactures are of silk,
cloth, and paper, and the country produces a large amount of
a small scale; that of tobacco is a government monopoly.
Pest however has, next to Vienna, the greatest trade of any
city on the Danube. It has four fair, each of which lasts a
fortnight. The principal manufactures are those of the
natural productions of the country, such as cattle, wine, wool,
tobacco, and red 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 environs
of Pest 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
Oreyes; and the Palantine, or Margaret Island, in the Danube,
which is laid out in walks and gardens with great taste.

Among the inhabitants are many noblemen, country gentle-
men, professors, judges, and lawyers. The population of
Pest consisted (1859) of 62,850 inhabitants, of whom about
14,700 were Jews. There are 81,333 Greeks, and 5000 Jews.
With the addition of the garrison (9133 men) and the numerous
strangers, the population amounts to 75,000. Pesth, though a
ancient town, is in its present condition, only a city of
February 28
long habitually inhabited. It was
the possession of the Turks for nearly 160 years, who were not
finally expelled till 1856. Civil war followed, and at the
beginning of the eighteenth century Pest was one of the
most incompre-
Nee town in the empire. Its improvement may be dated
from the reign of Maria Theresa, and it has since been
progressive and rapid. In 1793 there were only 25,000
houses: there were in 1837, 4500. The winter of 1858 was disastrous
to Pest, above 1200 houses were destroyed by the overflow-
ing of the Danube. 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 con-
tributions sent to them from all parts of the empire, will in
a few years efface all traces of the devastation.

J. v. Thiele, Das Königreich Unzarn, vol. vi.; Oster-
reichische National Encyclopædie; R. v. Jenny, Hand-
buch für Reisende in Oesterreich; Blumenbach, Gemälde
der Freundschaft, Excursionen unter die historischen
Monumente.

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 misapprehen-
sions have arisen from the propagation of the disease, and
from writers having applied the terms pestilential and pesti-
ilent in a generic sense to diseases specifically different;
nevertheless, we read of pestilential small-pox, pestilential
cholera, &c., and by the same general term we understand a
pestilent, 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 nature
of the plague. The nosological definition of this disease
by Dr. Cullen is perhaps as correct as can be given in few
words. The symptoms are highest degree contagious,
accompanied with extreme debility. On an uncertain
day of the disease, there is an eruption of buboes or car-
buncles. Dr. Patrick Russell, who practised at Aleppo
to the plague of 1764-5, remarks that its progress
its commencement was the same in the several parts of 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
controlled by gangrene; and in the hands of physicians, the
cases in which the eruption is wanting constitute the most
rapidly fatal type of the disease. The general de-
velopment of the system which usher in an attack of the
plague, whatever are not the effects of the poison, are
ordinary fever. 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 dulness of the eyes; by coma,
delirium, and other affections of the sensorium, which
terminate in death in some on the second or third day.

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
are common in the third or fourth stage of the disease.

Fever. 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 growth or increase of some of the disease, and the absence
or presence of some particular symptoms. Russell
informed by Sydenham that in the infancy of the great
plague of London scarce 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
depart 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 fever and other symptoms had preceded.

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 buboes being of a more violent nature, than the
seldom or never had buboes or carbuncles. The bubo
however was the most frequent concomitant afterwards;
carbuncles, on the contrary, were remarked in one-third of the
cases. There is a very great difference between the
month of May, near three months after the disease
began to spread. The carbuncle increased in the summer,
less common in the autumn, and rarely was observed
in the winter. The absence of buboes and carbuncles at the
commencement of the plague has been one of the causes of
contention among writers as to the real nature of the
disease. Diermbrouch and some others assure us that no one
symptom is pathognomonic of plague, and Dr. Russell
withholds it, under a form of all others 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 coun-
try, that it is difficult to regard them otherwise than as types
of the same disease. This opinion is strengthened 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
groups, which is not only attended with buboes, but also
attended with buboes and carbuncles.' Sir John Pringle
too observes, 'that though the hospital or gaol fever may
differ in species from the true plague, yet it may be accounted
for by the naked skin to propagate in the same manner,
and is attended with similar symptoms.' The buboes which
carcinise plague consist of inflammatory swellings of the
glands in the groin and armpits; the pyretic, 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
inflammatory swellings of the skin, scabrous, pustular,
putrifying, frequently terminate in mortification. They may
be seated on any part of the body. The morbid changes
are met with in the bodies of those who die from the
plague, which are very similar to what we find in typhus, in
fever, and in the carcases of animals that have died in con-
tact 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
with giddiness, sneezing, vomiting or diarrhoea.

Dr. Patrick Russell, who practised at Aleppo
to the plague of 1764-5, remarks that its progress
its commencement was the same in the several parts of 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
controlled by gangrene; and in the hands of physicians, the
cases in which the eruption is wanting constitute the most
rapidly fatal type of the disease. The general de-
velopment of the system which usher in an attack of the
plague, whatever are not the effects of the poison, are
ordinary fever. 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

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 knackers, tanners, water-carriers, bakers, and oilmen, seem to share this advantage; while some are noted, and it was the custom 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 lowest, and filthy, part of the city, inhabited by the poorest 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 sordid filth, crowded state, and wretched inhabitants. This 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 this fatal malady that has engrossed so much attention 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 plague which appears so frequently to be preceded by certain natural signs, and by a greater mortality from malignant diseases generally than at other times. Among these prescriptive signals great and sudden atmospheric vicissitudes are among the first to be attributed to the origin of a pestilence 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 unreasonable state of the air, which suddenly vanged, from one 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, it appeared that it was not from the heat of the day, which 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 1756-7, which preceded the pestilential fever of 1758 at Aleppo, and the plague of 1756-9 and 1757-8 in different parts of that city, were very severe. Oliver vouched that 26,000 had withstood the winter for fifty years were killed. In the following summer a dearth ensued from the failure of the crops, and so severe was famine, that parents devoured their own children for bread. Women sold 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 Constantineople was infested with crowds of grasshoppers of great size that devoured every green thing, and the next year (1613) the plague carried off 600,000 inhabitants of that city. In 1612, swarms of locusts laid waste the corn kingdom 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 and of Pharaoh for ten plagues were each occasioned from corruption of the rivers and fountains, swarms of insects, murmur among cattle, thunder and thick darkness, and a tribe of inferior diseases, to that fatal pestilence which swept away the first-born of the Egyptians. In fine, death or unhorseshovel provision for man, and among cattle, a 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 has also been observed by physicians which occasion great mortality. Lord Bacon has observed 'that the lesser infections of small-pox, purple fever, agues, &c., in the preceding summer and hovering all winter, do portend a great pestilence the following summer following the putrefaction of the air rises 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, and that, if a comparison is to be made, besides the plague, in 1625, 1636, and 1665, we arrive at the year before and after respectively:

Year. | Common Diseases. | Plague.
--- | --- | ---
1625 | 12,778 | 18,848
1626 | 7,103 | 4,700
1633 | 10,631 | 13,200
1636 | 12,959 | 10,400
1637 | 8,681 | 3,082
1644 | 18,291 | 16
1655 | 26,710 | 68,596
1666 | 10,840 | 1,998

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 at their height in July and August, in August, 20,456; in September, 26,230; in October, 14,373; in November, 3,449; and in December they were under 1000. In Egypt it commences in the autumn, and prevails till the following summer, and with greater severity in the whole of the greatest fatality. Extremes of heat and cold generally check and not unfrequently entirely arrest its progress. In tropical climates the disease is unknown, and in Egypt, according to Alpinnus, to whatever degree pestilence may be raging, as soon as the season of Cancer it entirely ceases. The cold weather of northern climates has been observed to check the ravages of plague; and in these countries when it has broken out in the autumn, its course has been arrested during the winter months, and the 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 malignity of the disease. With its progress the atmospheric condition is essential to its progress 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 above table. 

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 rests mainly 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 ascertained by the contagionists that plague is transferred from individual to individual in all the ascertained 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 importation; and where strict isolation from 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 prevalent bad 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 this 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 lazaretto, 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 hospital, she has twice more been received, and the matron who changed the linen, were taken ill the next day, and died after a few hours. In a short time it destroyed physicians, surgeons, apothecaries, confessors, and all who had been in contact with the infected people of the poorest order in the hospital, including above 300 foundlings. The priests and monks who attended the infected, suffered in the same manner as the medical assistants; and lastly, of 290 galley-slaves, employed in going into the infected houses and in the care of the sick, 290 perished, in the course of our twelve days. Many of these facts however may be not artificially termed false facts; and some of undoubted existence, that are brought forward as examples of contagion, may be equally attributed to febrile affections. In the case of the recent epidemic, that arose at State College, by the 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 febrile affection. If then, as the circumstances above notified, are superadded corrupt food and the influence of a sickly season, is it surprising that misfortune endowed together with most pestilential contagious power should be generated? But this rapid transit of plague from one individual to another is to be attributed to an epidemic disease. To illustrate this position by a familiar and well-known disease—epidemic scarlatina, or influenza: what is more common than for all the members of a family living together to acquire the disease at the same time, or for the same epidemic to be present, to be successively or almost simultaneously attacked? Yet nobody attributes the circumstances to contagion: certainly, if one had a motive for so doing, no one would agree with Dr. Bancroft, that 'it is fortunate for mankind that the communication of the contagion of the plague depends upon the co-operation of so many favourable circumstances, and particularly upon that of a suitable temperature, and of certain aptitudes and susceptibilities in the human subject; for without such requisites, or such obstacles 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, so far as we are informed, 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 scourge, is the result of a government establishment of establishments. 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 pandemic of the plague of Egypt consisted of about 300 persons; but notwithstanding the severest precautions which were adopted, and the plague spread, 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 to those who were suspected 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 were held there; a close correspondence to that of the 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. The Turks and Moors, says Bruce, 'immediately after St. John's Day, set-plague the clothes of the many thousands that have died of the plague during its late continuance; and though these consist of furs, cotton, silk, and woollen cloths, which are stiffs the clothing of cleanliness and respectability to those who wear them.' Clot Boy, who is at the head of the medical department in Egypt, and has treated thousands of cases, says, that removed from malaria or miasm, he has never known the plague to be communicated by contact. He has twice more been received, and the matron who changed the linen, were taken ill the next day, and died after a few hours. In a short time it destroyed physicians, surgeons, apothecaries, confessors, and all who had been in contact with the infected people of the poorest order in the hospital, including above 300 foundlings. The priests and monks who attended the infected, suffered in the same manner as the medical assistants; and lastly, of 290 galley-slaves, employed in going into the infected houses and in the care of the sick, 290 perished, in the course of our twelve days. Many of these facts however may be not artificially termed false facts; and some of undoubted existence, that are brought forward as examples of contagion, may be equally attributed to febrile affections. In the case of the recent epidemic, that arose at State College, by the 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 febrile affection. If then, as the circumstances above notified, are superadded corrupt food and the influence of a sickly season, is it surprising that misfortune endowed together with most pestilential contagious power should be generated? But this rapid transit of plague from one individual to another is to be attributed to an epidemic disease. To illustrate this position by a familiar and well-known disease—epidemic scarlatina, or influenza: what is more common than for all the members of a family living together to acquire the disease at the same time, or for the same epidemic to be present, to be successively or almost simultaneously attacked? Yet nobody attributes the circumstances to contagion: certainly, if one had a motive for so doing, no one would agree with Dr. Bancroft, that 'it is fortunate for mankind that the communication of the contagion of the plague depends upon the co-operation of so many favourable circumstances, and particularly upon that of a suitable temperature, and of certain aptitudes and susceptibilities in the human subject; for without such requisites, or such obstacles 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, so far as we are informed, 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 scourge, is the result of a government establishment of establishments. 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 pandemic of the plague of Egypt consisted of about 300 persons; but notwithstanding the severest precautions which were adopted, and the plague spread, 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 to those who were suspected 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 were held there; a close correspondence to that of the 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. The Turks and Moors, says Bruce, 'immediately after St. John's Day, set-plague the clothes of the many thousands that have died of the plague during its late continuance; and though these consist of furs, cotton, silk, and woollen cloths, which are stiffs the clothing of cleanliness and respectability to those who wear them.' Clot Boy, who is at the head of the
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 mischief 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 1833, and 77 in 1836. With respect to the management of buboes and carbuncles, they must be treated in the way which is found efficacious in their removal when unaccompanied with plague, and if by these means we are unable to cure the patient, 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 any epidemic disease, although under that name, are obviously a different disease; even among those we have selected, the vagueueness with which the symptoms of some are described, leave us in doubt whether the disease was not the same as that which at present goes under the name of plague:

---

511. The plague of Egypt. Exodus, xii.
1490. in the Wilderness. Numbers, xi.
1190. in the Grecian camp at the siege of Homea. Homer, ili. 13.
1141. among the Philistines. 1 Sam. v. and vi.
1017. in Canaan. 2 Sam., xxiv.
464. in Livy, iii. 6; Dion. Halicar., lib. x.
450. in Livy, iii. 24.
437. in Livy, iv. 21, 25.
430. of Athens. Thucydides, ii. 48, &c.
404. of Carthage. Justin, xix. 2; Diod. iii.
366. in Rome. Livy, vii. 1; Short On Air.
296. in Livy, x. 31, &c.; Orosius, vii. 21.
182-177. Rome and all Italy. Livy, xii. 21.
126. Numidia and Carthage. Livy, Epit., 60; Orosius, lib. v.

---

187. Rome and Italy. Herodian, lib. i.
407. Most of Europe, Asia, and Africa. Nicephorus, xiii. 6 and 36; Magdeburg, cent. v. 13.
1572 and 1763. Italy, in most parts of Europe. Thuanus, lib. liii.; Short, vol. i.; Mercurialis On the Plague of Venice.
1609 and 1663. London and various parts of Europe. Maitland's Hist. of London; Mignot, Hist. of the Turkish Empire, p. 256.
1625. London and various parts of Europe. Short.
1635 and 1636. London, Nimeguen, and several other places in Europe. Diennebroek, Tractatus de Pestis.

PENTIENTIAL: EPIDEMIC, OR ASIATIC CHOLERA is a disease much more fatal than that described in the preceding article; and in its endemic origin, its occasional epidemic eruptions, its selection of victims, and the localities which it ravages, it bears a striking resemblance to plague. The essential difference is however perceptible, and is generally to be seen by the following account of the symptoms of cholera.

The disease has two well-marked stages: the cold or choleric, called also the stage of collapse; and the hot or febrile stage, or that in which reaction takes place. The first is generally preceded by certain premonitory symptoms, among the most prominent of which is diarrhoea, accompanied usually with languor and some degree of nausea; the dejections are faecal and bilious, and often very copious. The commencement of the purging may precede the accession of the febrile stage for several days, or only a few hours may elapse. It is important not to think lightly of this disorder during the prevalence of epidemic cholera, for many persons may be preserved if timely warning had been taken, and appropriate treatment adopted for removing it, before the accession of the symptoms about to be described.

Symptoms of the Cold Stage.-The time of its invasion is, in the majority of instances, from six or seven hours to the morning. The patient is attacked with uneasiness of the stomach, to which speedily succeed vomiting and purging of a watery, colourless, and inodorous fluid, similar to barley-water, or more frequently to rye-water: sometimes it is like milk, and occasionally yellowish; but the 'conjee stools,' as they are termed, which consist of albuminous flakes floating in serum, or discharges of pure serum, are of the most frequent occurrence. These discharges are attended with severe cramps in the extremities, especially in the calves of the legs, and are succeeded by exhaustion, giddiness, and sinking of the pulse; the pulse is small, weak, and accelerated; and after a certain interval, becomes imperceptible. The skin is cold from the commencement; and as the disease advances, it becomes gradually colder, and is covered either with a profuse sweat or a clammy moisture. The features are shrunk and anxious: there is restlessness and agitation, with great thirst, heatburn, and hurried respiration. Notwithstanding the coldness of the body externally, the patient complains of heat, and throws off his bed-clothes. As the cold increases, the skin frequently becomes blue; the eyelids, which are usually red, seem drawn, and are fixed at the base of their sockets; the tongue is cold, but moist; the voice is feeble, hollow, hoarse, and interrupted; but the mental functions remain undisturbed to the last. At this advanced period the collapse is complete, and the respiration very laboured; he who suffers little or no pain, presents the appearance of a
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, had not the boundaries of the body, but died by the die of exhaustion before all these symptoms had declared themselves. In the majority of cases the spasmatic symptoms are first observed, and afterwards the collapse: the former are characterized by great pain, diaphoresis, and vomiting, the 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 temperature returns to the pale or blue cheek succeeds the flush; the eye brightens; 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 distress, and faintness. 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 charlatanism and belladonna poisoning, informs M. Dalmaz, 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 Houbly and Inhoy, where it was supposing that the patient was mortified 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 three to four days. Mortality was in the danger; and if the patient survive it, the more violent and malignant is the subsequent fever. The cases in which spasm and vomition 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 the stomach, intestines are found either a transparent or a turbid serous fluid, mixed with a white opaque substance in the form of flakes, and similar in all respects to the matters ejected during life. The mucous membrane lining the intestines is usually a pale yellow, 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 132 grains of blood, 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 possessed the extremity more rapidly the morbid situation.

**History and Statistics of Cholera.**—The last outbreak of pestilential cholera, which commenced in India and travelled its way from thence to Europe, was as if perhaps the most diffused and best observed of any similar visitation: the observations we shall have to make will therefore chiefly relate to this epidemic. It originated in the intestine of a Nuddah, in some other part of the district 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 spread itself throughout the extreme length and breadth of the Indian peninsula, yet bearing unseen 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 borders of India, and entered into the Indian Archipelago, the parts of Eastern Asia, and making gradual progress through these countries, reached China in 1820, and in the following year visited the numerous and populous islands of the Asian Archipelago, the labours of European 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, the parts of Arabia, Persia, and Syria, and closely threatened Europe; it appeared in the Russian territories in 1823, at Tefflis, Orenburg, and Astrakhan; but its further northern and western progress was stopped for a time. It however reappeared in Orenburg in 1823, and in 1829 it 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 the epidemic was always the same, the disease having been observed that prior to its appearance in many countries, and during its continuance, easterly winds were uncommonly prevalent; but most accurate and extensive meteorological observations, made daily during the continuance of the disease, show quite contrary; the very opposite; the fluctuations of the barometer, 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 in most places, and to continue for some months after its cessation. In many localities the disease existed only for a few weeks, while in others it lingered for several months. In the first case, the fever was very mild; in the latter it continued, and the duration of the disease generally diminished as its stay was prolonged. Into whatever country or town the disease advanced, its first and most deadly fury was expended upon the poorest and most miserable of the population, and upon those who inhabited crowded districts, or low humid 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 to itself, and not 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 1828, we learn from the 'Report to the Medical Board at Bombay,' that there is reason to believe that of 1894 cases which received no medical assistance, every individual perished; and it is added, that it is not ascertained that any person has recovered to whom medicine had not been ad
dministered. This appalling statement however is without parallel, and it is gratifying to know that where the premonitory symptoms have been combated by early and judicious treatment, the mortality has been diminishe
d. 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 six died in the cases of those in the military hospitals; a result doubtless to be attributed to the strict surveillance exercised over the troops, by which nearly one-half of the cases among them were noticed in the premontary stage, and consequently could be relieved in time. The mortality has been diminishe
d 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 almost total, but in the less severe it has not been great. One of the most extraordinary features of this epidemic, observes Major Tulloch, is that the proportion of deaths to the number attacked has been very nearly alike in all the military commands in which the medical reports have been investigated: for instance—in the United Kingdom, the
deaths were in 33; in Gibraltar, 1 in 33; in Nova Scotia, 1 in 33; in Canada, 1 in 3; in Honduras, 1 in 3; in the Mauritius, 1 in 8). The Mauritius appears to be the only exception to this; so that either the epidemic was less in its character, or the remedies employed were more successful.

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

| Age | Ratio of Deaths at each Age, per 1000 of those living.
|-----|-------------------------------------------------------
| Under 18 | 15:6
| 18 to 25 | 25:3
| 25 to 33 | 25:3
| 33 to 40 | 30:6
| 40 to 47 | 35:8

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 it. The greater mortality of the disease in females has also been observed in this country. Dr. Ogden informs us that of 145 fatal cases of cholera at Sunderland, 63 were males and 82 females.

In the same season we possess no information how the mortality in the different races of mankind is rather meager. 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 Spanish and Portuguese, 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 108 were whites, 570 coloured, and 599 negroes; or, in a negro proportion, it seemed peculiarly subject to the disease. This great susceptibility of negroes to the invasion of disease, while absent from their native land, we have had occasion to notice in the article on Cholera; and the time seems to be in which the last effect in weakening this 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 1773. At this date, more than 2000 out of 4200 slaves belonging to government were cut off by it, and those belonging to the planters nearly as many.

Causes of Cholera.—That the whole series of phenomena results from the action of a morbid poison on the body, there can be no doubt; that this morbid matter is indigenous 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 countries where it has not been observed. But from the overflow of the Nile should produce plague; that of the Ganges, cholera; that of the paroxysms in the trops, yellow fever; or our own marshes, simple intermission; and to this infection with which, in the present state of our knowledge, at all account for the epidemic spread of some of these endemic diseases. The doctrine of contagion has been brought to account in cholera, as in many other diseases, in order to explain its diffusion, and it has been assisted 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 earth, 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 appearance in Madras, for instance, this spring, 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. It did not occur until the 12th of July, to which there was, on the contrary principle, it ought to have been conveyed 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. In its introduction into this country likewise, supposing it to be imported, so far from following the great routes of human intercourse, it chose one of the least frequented paths. The principal evidence on this point, which was collected during the last summer, pointed to the negative its 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 there are at greater liberty to declare 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 in circumstances of every description of attendance on those suffering under the epidemic, were in no instance affected by it. In the military hospital too it was observed that the orderlies employed in attendance on the sick were not attacked in a greater proportion than others who were not employed; 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 intuality 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 last war in Germany, the fifty-third day of the month and the last day of 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 in nature or the result of exposure to the cold, in an unhealthy locality, by unwholesome 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 specified substances against the disease, our treatment must be regulated by the symptoms. According to this rule, the premonitory symptoms only are present, the stomach should be unloaded by an emetic, and a table-spoonful of 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 it is to be feared 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; and yet we find, as Golding, in giving the white inhabitants of the towns who had the advantage of the best medical science. In this country, blood-letting, cold affusion, hot-baths, emetics, purges, astrin gente, sedatives, and stimulants, are in constant use; and in the recent instances have been used with very doubtful advantage. The plan, 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. Letts on 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 106° to 110° Fahr. Of 74 bad cases treated in this manner, 73 recovered; and of 18 cases in which unfavourable symptoms occur, and this was from phlebitis, or inflammation of the veins. As much as 33 lbs. of this alkaline solution have been injected in the space of 52 hours, and with a successful result, but have even exceeded in amount this quantity. The composition of the saline injection employed by Dr. Latta consisted of two drachms of common salt and two scruples of carbonate of soda dissolved in sixty ounces of water; but this formula has been altered in various different cases. The immediate effects observed on injecting this fluid into the veins are, an increase of the temperature and perspiration, a reappearance of the pulse, if before imperceptible, and in some instances at 90 pulsations to the minute; and in some small, frequent, and feeble. The collapsed appearance of the countenance gradually vanishes; it becomes fuller and
PET is a form of the Latin "petere," meaning to ask or seek, and evokes a sense of urgency and purpose. It is a name often associated with acts of supplication or prayer, reflecting the importance of seeking and obtaining divine favor. The name has a rich historical context, often linked to the practice of petitioning for important matters or seeking divine intervention. In a broader sense, it can symbolize the human desire to connect with the divine or to seek guidance and support in difficult times.

In literature, the name PET might be used to emphasize themes of spirituality, faith, or the quest for understanding. It could also be used to denote a character who is characterized by a strong sense of purpose or dedication to a cause, whether that be religious, political, or personal. The name's versatility allows it to be adapted to various narratives, from epic tales of divine intervention to more personal stories of individual struggle and devotion.
believers, who, in consequence of persecution in Judaea, were obliged to take refuge in distant provinces: and at last, since the ministry of the circumcision was committed to St. Peter, it is more likely that he should address himself less to the nation than to Gentiles.

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 how much less probable it is that he should have desired to disguise the city of that name, 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 distress. Babylon was 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.p. 63, and suffered martyrdom about 65, the Epistle may be dated in 64. It was written in the period of general calamity to the Church; and the design of the Apostle is to console and strengthen his converts in their trials, and teach them now to bear persecution. He exhorts them to honour and obey the civil authorities; and, above all things, to lead a holy and blameless life, so that they might not be in-accusation and calumniators, and by their example gain over others to the side of Christianity.

The best critics speak highly of the excellence of this Epistle, without restricting it to the new, but full of matters, and 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 truth and certainty of its doctrines. Careless about the disposition of his words and the rounding of his periods, his heart is absorbed and his thoughts swelled with the importance and grandeur of his subject. His style is vehement and passionate, and he 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, to warn them against profane scoffers, and to prepare them for the future judgment of the world.

(Peter's Introduction: Macknight; Benson; Michaelis.)

PETER. ST. MARTYR. [Office, Holy.] PETER OF BOLIS, better known by his Latinised name Petrus Blesiasio (Blos being his birth-place), a writer of the twelfth century, who spent much of his life in England, and was ordained priest by King Henry II., who gave him the archdeaconry 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 that has been preserved, Peter had the 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 his archdeaconry 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 1200. The edition of his works by Pierre de Gossinville, folio, 1650, is the best. Those works 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 Geschichte und Verwaltung, vol. vii., p. 267. (Savigny, Geschichte des Reichs, Band vii., Seite 48.)

PETER OF SICILY. [Sicilies, The Two, Kingdom of.] PETER THE CRUEL. DON PEDRO I., son of Alonso XI., after his father's death succeeded to the united crown of Castile and León, in 1350, being then only sixteen years of age. His first step was to put to death Leonor 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 Garcilasso de la Vega, the adelantado of Castile, in Tordesillas, imprisoned him, and caused his death by his ballasteros, or men-at-arms. In 1353, he assembled the Cortes at Valladolid, and endeavoured, but without success, to obtain the abolition of the Behetrías, which had been established for the benefit of certain 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 kept with his maternal uncle, Alonso or Afonso I., king of Portugal, the same advice as to the necessity of moderation, and above all as to adopting conciliatory measures towards his half-brothers, the sons of Donna Leonor, who possessed great influence in the country. Pedro listened to the advice, and in the last months of the eldest of his natural brothers, Don Enrique, called Enrique of Trastamare, to his court, where another brother, Don Tello, already was. But his brothers did not trust him, and they soon left Pedro, rebelled against him, and emigrated into Aragon. In 1354, 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, beheld with coldness to this bride, and she was therefore chosen by the counsellors and calumniators, and by their example gain over others to the side of Christianity.

The best critics speak highly of the excellence of this Epistle, without restricting it to the new, but full of matters, and 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 truth and certainty of its doctrines. Careless about the disposition of his words and the rounding of his periods, his heart is absorbed and his thoughts swelled with the importance and grandeur of his subject. His style is vehement and passionate, and he 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, to warn them against profane scoffers, and to prepare them for the future judgment of the world.

(Horne's Introduction: Macknight; Benson; Michaelis.)

PETER, ST. MARTYR. [Office, Holy.] PETER OF BOLIS, better known by his Latinised name Petrus Blesiasio (Blos being his birth-place), a writer of the twelfth century, who spent much of his life in England, and was ordained priest by King Henry II., who gave him the archdeaconry 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 that has been preserved, Peter had the 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 his archdeaconry 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 1200. The edition of his works by Pierre de Gossinville, folio, 1650, is the best. Those works 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 Geschichte und Verwaltung, vol. vii., p. 267. (Savigny, Geschichte des Reichs, Band vii., Seite 48.)

PETER OF SICILY. [Sicilies, The Two, Kingdom of.] PETER THE CRUEL. DON PEDRO I., son of Alonso XI., after his father's death succeeded to the united crown of Castile and León, in 1350, being then only sixteen years of age. His first step was to put to death Leonor 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
Pedro to an entertainment, in the midst of which a number of armed men entered the hall, seized the Moors, rifled their persons, and dragged them to prison. The following day Abu Said, mounted on an ass, and thirty-seven of his followers, was conducted to the city of Seville, preceded by a herald, who cried, that they were condemned to death by King Don Pedro, for detaining their lawful sovereign Mohammed Ben Yasef. Being conducted to a fortress, they were surprised, and Abu Said was brought 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 Seville on the king’s promise, and as 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 Bertran Duguesclin and other French leaders and warriors 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 resistance. 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 he was prevented by the attempt of Edward III. of England, and returned to his dominions in 1363. A.D. 1366. Edward III. of England, depended chiefly upon the assistance of the Black Prince, who was then in Gascony. While passing through St. Iago he committed another deed of treachery, the motive of which was not clearly ascertained. The subject of the matter was the Emperor’s alarm and anxiety 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, and Pedro embarked at Corunna, and sailed for Bayonne, A.D. 1366.

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 Roncesvalles, they crossed Navarre, with the consent of that king, and entered Castile. The English were received with feelings of respect. The historian Calverley and Sir Robert Knowles, at the head 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 35,000, and the frequency of names and numbers was astonishing, but the men were not all true to his cause. The two armies met at Najera, a few miles from the right bank of the Ebro, on the 3rd of April. The battle began with the war cry of ‘Guipues 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, however, with very few followers, retired into Aragon. Pedro, whose ferocity had not been tamed 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 lordship on a town of his own province. The Black Prince, disgusted, and out of health, with his troops half starved, returned to Guipues, where he arrived in July. After his departure Pedro gave vent to his rage by these changes and repulsions. The insurrection spread, and 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 ruled the nobles with an iron sceptre, he was not so obnoxious to the masses of the people, who were 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 cause the common people to be brought to tears by his reproaching and chastising mien.

In March, 1369, 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, sought to find Enrique. Enrique would not assist him to escape. Duguesclin informed on him and treacherously offered, 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 treachery and foul manner in which he was killed. Enrique II. was then proclaimed throughout Castile. (Dunham, History of Spain and Portugal, and authorites therein of which I am ignorant.)

PETE THE FIRST, called the ‘GREAT,’ Czar of Russia, was born at Moscow, on the 11th of June, 1672. His father, Alexius Michaelovitz, was twice married: by his first wife he had two sons and four daughters; and one son and two daughters (Alexis and Alexzena) by his second wife. The Czar Alexius was a man of a liberal mind; he commenced the work of improvement among his barbarous subjects, established manufactures, reduced the laws into a code, resisted the usurpations 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 one son, Peter, and one daughter, Anna. The former was subject to epileptic fits, and of so weak intellect that Theodore named Peter as his successor. The princess Sophia, an ambitious woman, who had intended to reign herself, through the medium of her incompetent brother, being enraged at this appointment, engaged the strelets 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 strelets, who found him before the altar, and were only deterred from striking a fatal blow by the repeated intercession of the priests. When Peter was seventeen, his party brought about a marriage between him and the daughter of 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 marriage the post of Galitzin was given in exchange; the former’s plans were entirely deranged by this event, raised an insurrection, which however was soon suppressed, and Galitzin was banished to Archangel, 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 (1689) Peter reigned supreme; his brother Ivan never interfered, and died in 1696. Peter was now in the eighteenth year of his age. The Black Prince’s plans were made: his features were regular, but indicated, when grave, 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 in 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 with profit to study, for it was in the year 1697 that he undertook the 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 the new system as a violation of the old tradition. Peter’s indomitable energy however overcame all obstacle. He first directed his attention to the army, in which department his plans were ably seconded by General Le Fort and Patrick Gordon, who, with other foreigners, had entered into his service. He himself entered the army as
PET
PET

a private soldier, and rose through all the intermediate
ranks before he obtained a commission. He caused all
the young boors to follow this example. He made them
soldiers and cruise their long coasts, shave their beards,
and dress their hair, 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 native town Pskov, and shaped like Lake Pskow, until that becoming
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 sean-
man. His taste for everything connected with ships was
now apparently a decided propensity. He resolved to be
no 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 in-
creased that it was necessary to take some steps towards
augmenting the revenue, which he did, through the advice
of his foreign counsellors, by raising the custom-house du-
ties from 1s. 10d. to 2s., which increased the annual re-
eceipts to 50,000 rubles. In the first year, 1596, he besieged
and took Azoff. During the rejoicings which followed this
first victory by the army and navy of his own creation, some
of his officers and seamen were inspired to put
him to death, but, being betrayed by certain of the confede-
rates, the plot was defeated by their arrest and execution.
Russia was not at this period represented at any of the
courts of Europe, but Peter, being more than ever convinced
of the pre-eminent importance of the whole of Europe
in his own barbarous subjects, resolved to visit these countries
himself, and for this purpose he despatched an extraordinary
embassy to Holland, accompanying it himself incognito.
Before he set out on this ravel in 1697, he took the preca-
ution of leaving General Gordon, with 4000 of his guards,
in Moscow, with orders to remain in that capital. He only
took with him twelve attendants, among whom were his
favoured companions of Galitzin, a valet de chambre, and a
nary appendage to all great men in Russia. He went
straight to Saardam, in Holland, took a small lodging with
two rooms and a garret, and a shed adjoining. He purchased
carpenters' tools and the dress of the dockyard artificers,
and there he and his companions spent almost all their time
in working as common shipwrights. Peter went by the
name of Pieter Timmerman; he rose early, boiled his own
pot, and received wages for his labour. He was described by
the Dutch as a jovial man being robust, quick, nimble, and nimble of foot, rapid in all his actions, his face plump and
round, fierce in his look, having brown eyebrows and curving
brown hair, and swinging his arms in walking." He spent much
time in the company of the English captain John Bider Zen, a
man of his own age, who made him a boswip for his yacht; he also assisted at rope-making, sail-making, and smiths' work. A bar of iron which he forged for
at Olenetz some years later, with his own mark stamped
upon it, is preserved in the Academy of Sciences at St.
Petersburg. In the same spirit of inquiry and eagerness to
learn, he visited every manufactory, examining into all the
details of each. He attended the hospitals, where he learned
to bleed and draw teeth; he was very fond of practising in a
surgeon's way. From Holland he proceeded to England,
where he arrived in January, 1598. As his chief object in
coming to this country was to learn the theory of ship-
building, and the method of making drafts, and laying
them down in the mud-loft, he did not disgrace his asso-
ciation at the crowds which assembled to see him, and at the
festivities given in his honour.

The Marquis of Carmarthen was appointed by King William III. and the Stuarts, and prepared to
pass their nights together in drinking pepton and brandy.
Peter visited the dockyards of Deptford, Woolwich, and
Chatham. He spent much of his time at Rotherhithe, where
a ship was building for him. After his day's work, he and his
companions were in the habit of retiring to a public
house near Tower-hill, to smoke and drink beer and brandy.
The house still bears the sign of the Czar of Russia.
He went to Portsmouth, to witness a grand naval review
and ship-models. He quitted London for St. Petersburg after
several men of science, engineers, and officers for his army
and navy. He spent a short time in Holland, and then
proceeded to Vienna to make himself acquainted with the
dress, discipline, and tactics of the emperor's army, then con-
centrated near the lower Danube. He sent word to his mother
in Russia, which caused General Gordon in Moscow was now made
manifest. That Peter entered into the war of the grand
dukes of Mogul and Charles XII. with Charles XII. of Sweden,
lives and others were threw into prison to await the return of
the Czar. Peter quitted Vienna immediately on the receipt of this intelligence, and arrived at Moscow, after an absence of seventeen months, on the 15th of January, 1700.

The dark side of Peter's character now showed itself in
the savage nature of the punishments inflicted on the
rebels; in pillage of which it can only be said that this
was the only method of obtaining his reign, a practice which was
required to deter other rebellious attempts. He not
ordained that all, persons, civil as well as military, should
cover off the skirts of their Tartar coats, and shave their
beards: a tax was levied on all who disobeyed, which, from
the love of the Russians for these appendages, became a
fruitful source of revenue. He regulated the printing-press,
and caused translations to be published of works on various
arts and other subjects, established schools for the marine
officers, and the to too, and issued a new coinage of
with other countries, 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
be commenced from the 27th of February, as in other
to the 27th of February, as in other

Peter entered into an offensive league
with Poland and Denmark against Sweden. His army was
defeated before Narva by Charles XII., on the 19th of No-
ember in that year; but far from being dispirited at this
event, he was only excited to renewed exertion, and he ob-
erved that the Swedes would only length teach his soldiers
to beat them. In 1703 he laid the foundation of St.
Petersburg; and in the previous year the Russian army, under
Scheremataff, had gained a complete victory over an inferior
force of the Turks at Kolin, and laid siege to 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 Pultow, on the 12th of June.
Charles XII. 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 between the two was therefore a mere ceremony,
with all invention. 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 left in her guar-
dianship, and when his father was killed in battle, his
wife, under General Bauer, was much struck with the
appearance of a very young girl, who appeared to be in the
greatest distress. She had been married only the day be-
fore to a Livonian sergeant in the Swedish service, whose
loss she was then mourning. The great tempter took
on her, and received her into his house. Some time after,
Menzikoff being struck by her beauty, she was transferred
to him, and remained his mistress till the year 1704. When,
in the seventeenth year of her age, she became the mistress
of Peter, and gained his affections so entirely that he mar-
ried her, first privately and afterwards publicly. On the
17th of March, 1711, he declared the czarina Catherine
Alexina his lawful wife. She accompanied her husband
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 Moscow, he crossed the
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. After three days' action, the situation of the
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
the czarina's departure, the czar himself began to
have the towns of Azof and Taganrog, and the vizier sup-
plied the Russian army with provisions. Peter's health was
so much impaired after this campaign, that he went to Carlshald to drink the waters. From Carlshald he proceeded to Dresden, where his son the czarvitz Alexi Petrovitz was married to the princess of Wolfsbuttel. From Dresden he went to St. Petersburg, where he was received with great pomp. 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 Pomerania remaining to the Swedish Peter. The manufacures were shut up, and its markets closed. Leaving Menzickoff 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 Finlan.

The town of St. Petersburg and the county of Holstein, now Peter's dominions, had been created by the former czar, Peter, and was the foundation of the present library of that city.

He next defeated the Swedish fleet in a naval engagement, and instituted the female order of nobility, as well to honor the uxor 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 residence to the czarina.

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 his empress. His visit was received with pleasure in Berlin, Ro stock, 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 Lübeck, where he had an interview 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 child, which died on the next day. She remained at Amsterdam while her husband was in Paris, where he was received with great splendour. On his return to Amsterdam 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 interest his son in gold or silver. He had a kind letter from the Elector of Brandenb. This letter, together with the news of the death of the Elector, made the czar extremely sad. The letter was published throughout Europe, with which he had always evinced, and avoided them when possible.

His eldest son, Alexi, who had unhappily been left to the guardianship of his mother, had always been a source of disquiet 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 Alexi, had fallen a victim to the brutal conduct of her husband, after giving birth to a son, Peter Alexiovitch, afterwards Peter II. While yet grieving for the loss of his daughter-in-law, Peter renounced with his son on his conduct, and told him that he possessed unlimited power. Catherine died of a cancer in the breast, aggravated by excessive indulgence in wine of Tokay, in 1727, at the age of 38, having survived her husband only two years and a few months. She was succeeded by Peter II., son of the unfortunate Alexi. He was left in the guardianship of Menzickoff, who affiliated him to the young czar. Peter felt the greatest repugnance to her, and in consequence, with the help of Dolgorouki, his tutor, caused Menzickoff to be arrested and banished to Siberia. Peter next set about the publication of a new edition of it of 10 rubles a-day for his support. He died at Berezn, in 1729. The death of Peter the Great, whose magnificence exceeded that of crowned heads, died in poverty and exultation.

Among other works connected with the mechanical arts, Peter the Great translated "L'Architecture de Sebastien Leclerc;" "L'Art de Tourner, par Plumierr;" "L'Art des Ecluses et des Moulins, par Sturm."

The manuscripts of

Vol. XVIII—E

P. C. No. 1196.
with these, his journal of the Swedish campaigns from 1698 to 1714, are preserved at St. Petersburg.

PIETRO, [fl. 1224-1231; see Pietro il Grande, Hist. of Peter the Great; Mem. of Peter Bruce; Coxe's Travels; Biograph. Universelle.]

PIETRO II. [Russia.]

PIETRO III. [Russia.]

PIETRO CATANIA II.

PIETRO CHIAPPEL. [Crusaders.]

PIETRO HOSPITAL. [Crusaders.]

PIETRO 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 purchased land for the hostel, gave it to them belonging to the Friars of Poitou, 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. It consisted of the Prior, one of the regular canons, and Apprentice, one of the secular canons, and a single lay fellow. It was afterwards enriched by two canons, two clerks, and several lay 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 Langham, bishop of Ely, who gave the rectorcy of Cherry-Hinton; bishop Montacute, who appropriated the church of Triplo, and gave the manor of Cawell in Hadden, to the Prior, and Ramsay, who gave two fellow- ships and two scholarships, and gave two advowsons; and Dr. Hale, one of the masters, who gave the sum of 700l. and two rectories.

The foundations 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 judges or bachelors 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 Middlessex), 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 fellows are re quired for the vacations, and, in the latter part of the summer, the face of the college is lighted by a number of gas lamps. About the middle of Elizabeth's reign the five senior clerical fellows may hold any living 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 1659, by Andrew Peirse, D.D.; two, in 1661, by Lady Ramsay; and four, in 1703. Parks, Esq.

Two fellowships of 70l. per annum each, and four new scholarships of 30l. per annum each, have recently been added to the college from the donation of the Rev. Francis Gisborne to the benefactors of this foundation, bears the name of the donor. The two Gisborne fellowships are tenable for seven years, and any person may be elected from either of them into a foundation fellowship before he is of standing to take his M.A. degree. These fellowships are vacated by marriage, or by the possession of any permanent income amounting to 250l. per annum.

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 patrimony of Lord Melbourne, and the preference is given to scholars of Hertford school.

The living in the gift of this college are, the rectories of Glayston in Rutlandshire, Statherne in Leicestershire, Ex ford in Somersetshire; Norton, Witnesham, Newton, and Fenwenham, in Suffolk; and Chinton in Norfolk; with the vicarage of Hinton, and the curacy of Little St. Mary, Cambridge, in Cambridgeshire; and the vicarage of Elington in Huntingdonshire. Glayston rectory is annexed to the advowson of the vicarage of Glayston, and the curacy of Little St. Mary are tenable with fellowships.

This college stands on the west side of Trumpingtonstreet, and consists of two courts, the larger of which is 144 feet square, which stands east, and was built in 1632. The master's lodge is a detached 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.

(lyson's Magna Britannia, Cambr., pp. 163, 104; Camb. Univ. Calendar, 1840.)

PETR. A TAX ANTIQUELY LEVIED THROUGHOUT ENGLAND, according to some authorities, of a penny upon each house; according to others, of a penny upon every house which contained twenty pennyworth of any kind of goods, and paid to the pope. This payment, in ancient times, passed under the same denomination of Roman penning, and Rome-cot were the Saxon names; Denarii S. Petri and Census S. Petri, in Latin. The earliest payment of it is attributed by some to Ina, king of the West Saxons, N. 700; by others to Edward the Elder, in the reign of 790. At one period of his reign, Edward III. discontinued this payment, but it was revived by Richard II. It finally ceased at the Reformation. (Du Cange's Glossary; Hist. West Mercia, by W. Master; Cunningham, and see Camden, Itiner.)

PETR. RIVER, ST. [Mississippi, River.]的 raw text content.
appearance, without that overwhelming heavi ness which attaches to mullioned and tufted houses. Even the iron railings before the great houses are unadorned. At the western end of the nave are smaller 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 architectural scheme of the cathedral; 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 central pier being the lowest; each compartment has an arch equal in height to 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 faced with grouped pinnacles. 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 insertion, and some of them entirely altered. The pedimental addition at the eastern end, by which the aisles of the choir have been carried out square, is plain in its outward appearance, with large windows and bold buttresses, the latter surmounted by sitting statues in place of pinnacles. Northampton is distinguished for the fact that of Northampton cathedral there are no 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 on the steps of the choir, the chancel 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 of the choir is in the style of the time of Edward III, but the wood is poor and richly ornamented. There are few monuments, shrines, or chantry chapels, the devastations of the parliamentary troops having deprived the church of many of its ornaments of this class. The cathedral is described as one of the two cathedrals of A rthur, the son of Arthur, 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:—total length 476 feet 5 inches, breadth of the nave and aisles 78 feet, height of the ceiling of the church 78 feet, breadth of the church at the great transepts 203 feet, breadth of the transepts 69 feet, height of lantern 135 feet, measurements which are (I believe) inside measurements. Length of the western front 156 feet 8 inches; width of the extremities of the west front 156 feet, tower and spire (the latter since taken down) over the north-west transept from the ground, 184 feet, height of the central tower from the ground 140 feet.

The view of the cathedral is confined on every side except the west, at which end is a large court, 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 knight's chamber. On the greater part of the other sides is a row of the houses of the citizens, which is filled with tomstone. 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 yearly fairs; one of these, called 'Brigg fair,' is kept 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 for the assessment, personal or mixed, arising within the city, but suits above St. 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. Quarter sessions are held here, and here is held (except for the sessions of the quarter sessions for the county of Huntingdon, which includes the whole soke or hundred of Nassabourgh) are held for trying criminal actions of all kinds; the Custos Rotulorum, who is appointed by the crown, presides. The gaol consists of a small house, and is kept open and liberty and is miserably deficient. (First Report of Inquiry into Prisons in Great Britain.) Prisoners committed for trial for capital offences are sent to Northampton.

Peterborough has sent members to Parliament from 1 Edw. VI. (1553), and in 1 Edw. VII. (1661), and the parliamentary representation of the city was increased by the Act of 1707 as to the assessment of the city. The number of voters 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 375l., 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 91 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 archdeaconries: Northampton and Oundle. The bishop of Northampton comprehends the ten rural deaneries of Brackley, Daventry, Haddon, Higham Ferrars, Northampton, Oundle, Peterborough, Preston, Rothwell, and Weldon, all in Northamptonshire; and five rural deaneries of Alstow, East Hundred, Oakham soke, Rutland or Martinsey, and Wanlocke, all in Rutlandshire; the archdeaconry of Leicester (lately in the diocese of Lincoln) contains the seven rural deaneries of Aylesey, Frantam, Gartree, Goodlaxton, Gosgot, Leicester, and Spaskenkeigh.

The average yearly revenue of the bishopric is returned at 3918l. gross, and 3105l. net, including the prebendaries annexed to the see. The average yearly revenue of the cathedral is returned at 6357l. gross, and 511l. net. 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. [MORDANUS.]

PETERS, BONAVENTURA, 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 Pklingkerm, 'he represented with a marvellous exactitude and grace, and so well that he could fill the mind with pity and terror. The raging of the waves, the impending tempest, vessels foundering or dashed in pieces against rocks, the mariners perishing in the deep, or seemingly to be cast away upon the spouting waves; such scenes he expressed by his pencil with the utmost truth, nature, and probability.' Sometimes however he painted calms and views of castles, or towns on the sea-shore, with equal merit. There is the same light and spirited touch, the same transparency 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.

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

PETERSBURG, ST., a great port of European Russia, on the mouth of the Merewor, 9° 5' to 33° 22' E. long. It is formed of the ancient province of Ingeramannland, or Ingrisia, a part of Carolina, and some circles formerly belonging to Norogrod. It is bounded on the north by the Gulf of Finland, on the west by Lake Ladoga, on the north by the river by Pakow, and on the west by Lake Peipsi and Estonia.
Face of the Country; Soil; Climate.—The country is for the most part level, and in the north-east part it is moraine. In the south it is more elevated; a long range, called the Duderhof mountains, which in fact are only low hills, nowhere rising more than 210 to 300 feet above the level of the sea, covers the country for a great deal of the west and north. The good mountains, the Neva, the Luga, the Narva, and the Volkhow. The Neva issues from Lake Ladoga, near the fortress of Schlusselburg, in a straight line, but owing to the bend which it makes towards the south, the whole course is 60 miles (40 English miles) to the bay of Cronstadt, which ought to be considered as the mouth of the river, for the water is sweet and fit for drinking as far as Cronstadt. The banks are rather elevated; the breadth varies from 600 to 1200 feet, and the water is remarkably pure, light, and limpid. Within the city of St. Petersburg it divides into several branches. The climate is cold, damp, and not favourable to agriculture. The summer is short, but in general fine and often very hot; thunder-storms are neither frequent nor violent. The area of the government, according to Schubert, who is followed by all others, is between Arseniiff 16,400, Koppen 16,500, and Horschelmann 18,600. It is divided into nine circles. The population, in 1838, was 890,000. Though the climate is so unfavourable, and a large part of the land is forested, the crops raised are by no means scanty, though they are not sufficient for the supply of the great population of the capital. Flax and hemp are not much cultivated; fruit-trees do not thrive in the open air. There are however numerous gardens of the grandees, and parks; kitchen-gardens, which produce vegetables in abundance, and numerous hothouses which supply the capital with pines, melons, pears, apples, asparagus, &c. Timber is still the chief and a large part of 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 hares. 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 affords granite, gneiss, slate, marble, brick earth, potters' clay, &c. The villagers manufacture very little when wares are wanted. Tools and manufactures are almost wholly confined to the capital: there are however considerable manufactory of cloth, ramie, and blankets, as well as several glass-houses at Jansen, Dervich, and Yelagin. At the mouth of the river Calico of Schlusselburg, on an island where the Neva issues from Lake Ladoga. Gatchina, situated on a beautiful lake formed by the Ischola, has 7000 inhabitants, a military orphan-house, and a founding hospital. [Nева; Cronstadt.] 

PETERSBURG, ST., the second capital of the Russian empire (Moscow being accounted the first), is situated in 59° 56' N. lat. and 30° 40' E. long., at the eastern extremity of the Gulf of Finland, about three-quarters of a mile to 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 clearness 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 but equal St. Petersburg.’ There is nothing little or mean to offend the eye: all is grand, extensive, large, and open: the streets seem to consists entirely of palaces; the edifices are lofty and elegant, the persons, ladies, courtiers, &c., are all composed of masses of flesh, grace, and taste; and our 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 future seat of his empire. He had much to do, for the island, covered in summer with mud, and in winter a frozen pool. The adjacent country was covered with marshes and impenetrable forests, the haunt of bears and wolves. We cannot suppose the king of Prussia, or any other monarch, ever to have a strong position as a check upon the Swedes: this was the only place through which an intercourse could be established with civilised Europe, an object which he deemed of such importance. The nobility of the country, was not less important as a commercial place, during the connection of Novgorod with the Hanseatic league, especially in the sixteenth century. Under Alexis Michailowitch the fort and the town were almost wholly destroyed by fire, and the town was in 1720 in a state of ruins, yet it is 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 Neva. The main river, after throwing out the Nevka, divides into two branches, The Little Neva, which 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 east of the arms, which are separated by 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 will not be carried out. The difficulties 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 for from all parts of the empire. Peace not being yet concluded, the soldiers were encamped, and some of the boats on 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 danger, were often compelled, by want, to work 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, or Water Town, a rich and lively scene of the Admiralty quarters; between this and the northern right bank of the Great Neva, lie, from south to north, 1, Wassily-Ostrov; 2, St. Peter’s Island, the Island of Petrovsky, and the Apothecaries’ Island; 3, Kamzeno-Ostrov, Krestovsky, and 4, St. Nicholas Island. Then follows a heavy belt of groves, 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 Nevyksky Perspective is 14,350 feet long, the Great Perspective 10,220, and eight others 6000. The stone pavement is in general bad, and must be laid down afresh every year. The 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 clear, pure, 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 Trestoioki or Suwaroff Bridge, is 2456 feet long. These bridges are all removed whenever danger is apprehended from the ice. The banks of the river are thickly built at the mouth of the Neva. There are above seventy bridges over the canals, many of 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, yet its shores are in a low and flat state. The only exclusive of the Admiralty, which divides it into two parts, is furnished with a quarry 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 level of the street, and has a breadth of two feet wide, a breastwork 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 quarter which is in the immediate neighborhood of the Palace of the Russian 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 Wassyli-Ostrov, on the opposite bank, which was completed in 1834, is still finer, but less extensive. The houses are ornamented with the coroplasts and sphinxes, brought from Egypt, 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 2 convents of other orders, which are 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); 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 is very large. The 22nd of April celebra tion has only begun to enumerate the most remarkable:—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; during the great exertion 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 Marble Palace, an elegant but gloomy-looking building, in which 50 imperial rooms are set off for use. The new gardens, presented to Prince Potemkin by Catherine II. 4, The Anichkov Palace, the residence of the imperial Nicholas while he was grand-duke. 5, The Old Mikhailov Palace, where the emperor Peter resided and died. 6, The New Mikhailov 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 crown-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 War Ministry, and the stores belonging to the 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 streets in one court, which has a casement of the Fine Arts, &c. The Field of Mars, adorned with a statue of Siwashoroff, is extensive enough to admit 40,000 or 50,000 men to be reviewed in it. The Field of Mars is bounded 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 monuments is the Alexander Column, erected in honour of the emperor Alexander. There are also a celebrated statue of Peter the Great, a granite obelisk, 52 feet high, in honour of Romanzov, and the above-mentioned statue of Siwashoroff.

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 establishments are the university, founded in 1819, which has neither a theological nor a medical faculty; the academy of sciences, founded by Peter I., on the plan of Leibnitz; the academy of fine arts; the pedagogical institution for training teachers in the higher departments of learning; the ecclesiastical seminary in the convent of St. Alexander Newsky; the musical seminary, established on the model of the oriental institution; numerous institutions for the army and navy; the mining academy; the female schools of St. Catherine; the Smolnow convent, and the founding hospital for poor old soldiers; the city of St. Petersburg, and many private masters and gouvernesses in families, who are mostly Germans. The collections of all kinds are very rich. The imperial public library consists of above 400,000 volumes; that of the academy of sciences, of 100,000; and is enriched by the collections of private individuals, which are of 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 mineralogical objects. There is a lump of pure native gold weighing 25 lbs. and a lump of platinum of 10 lbs.; the collections in the Hermitage, Romanzov's museum, the extremely rich collections of exotic plants in the hothouses of the botanical garden, and many private collections of exotic curiosities. The descriptions of the imperial dwellings and gardens are too 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 Crimea, which is entirely gay, is almost entirely formed in fifteen languages. 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 Peter burg); 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 is very large. The 22nd of April celebration has only begun to enumerate the most remarkable:—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; during the great exertion 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 Marble Palace, an elegant but gloomy-looking building, in which 50 imperial rooms are set off for use. The new gardens, presented to Prince Potemkin by Catherine II. 4, The Anichkov Palace, the residence of the imperial Nicholas while he was grand-duke. 5, The Old Mikhailov Palace, where the emperor Peter resided and died. 6, The New Mikhailov 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 crown-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 War Ministry, and the stores belonging to the 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 streets in one court, which has a casement of the Fine Arts, &c. The Field of Mars, adorned with a statue of Siwashoroff, is extensive enough to admit 40,000 or 50,000 men to be reviewed in it. The Field of Mars is bounded 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 monuments is the Alexander Column, erected in honour of the emperor Alexander. There are also a celebrated statue of Peter the Great, a granite obelisk, 52 feet high, in honour of Romanzov, and the above-mentioned statue of Siwashoroff.

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 establishments are the university, founded in 1819, which has neither a theological nor a medical faculty; the academy of sciences, founded by Peter I., on the plan of Leibnitz; the academy of fine arts; the pedagogical institution for training teachers in the higher departments of learning; the ecclesiastical seminary in the convent of St. Alexander Newsky; the musical seminary, established on the model of the oriental institution; numerous institutions for the army and navy; the mining academy; the female schools of St. Catherine; the Smolnow convent, and the founding hospital for poor old soldiers; the city of St. Petersburg, and many private masters and gouvernesses in families, who are mostly Germans. The collections of all kinds are very rich. The imperial public library consists of above 400,000 volumes; that of the academy of sciences, of 100,000; and is enriched by the collections of private individuals, which are of 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 mineralogical objects. There is a lump of pure native gold weighing 25 lbs. and a lump of platinum of 10 lbs.; the collections in the Hermitage, Romanzov's museum, the extremely rich collections of exotic plants in the hothouses of the botanical garden, and many private collections of exotic curiosities. The descriptions of the imperial dwellings and gardens are too 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 Crimea, which is entirely gay, is almost entirely formed in fifteen languages.
bordered by fine gardens and country-seats. A large garden and a great deal of water. At a short distance 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, is the 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 gardens. A large portion of this palace was burnt down in 1826. At a short distance is the Pulkowenberg, 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 the English style by Brown. At Gatchina, Tchesme, and Srtola 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 476,886, of whom 338,512 were males and 138,374 females: in 1838 the total was 469,720, so that there was an increase in 1839 of 6666. It appears from M. Koppin, that of the 465,750 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 169,000, including females, there remain 360,600 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 | 19,219 | 9,687 |
| Artisans included in the guilds | 19,238 | 3,692 |
| Officers, not including the men | 45,406 | 10,336 |
| Domestic servants | 52,357 | 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, gold and silver articles, watches, surgical instruments, paper, snuff and tobacco, sugar, &c. There are others which the government has considered it advisable to carry on upon its own account; such are the great manufactories of paper, a very large factory of aqua-fortis, with an assay-office and a mint; a plate-glass manufactory, which produces mirrors 14 feet high and 6 feet broad, a porcelain manufactory, and a great manufactury of cotton and linen, in which steam-engines are employed, at Alexandrovsk, near the city; a considerable part of this manufactory was last year destroyed by fire. The government has likewise a cannon-founding and powder-mills.

The commerce of St. Petersburgh is very considerable. The construction of an iron railroad 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 steam-boats 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 198,961,386 rubles (in bank assignats), and the value of the exports 132,016,295 rubles; total 330,977,681 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, potash, &c. The increased exportation of wool deserves to be noticed. From 1800 to 1814, the average annual quantity exported was under 20,000 pouds; from 1814 to 1824, under 36,000 pouds; from 1824 to 1834, 112,000 pouds; and in 1838 it was 360,760 pouds. 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 1807, 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 916,000 rubles. The actual revenue now derived from the customs is about 50 millions of rubles.

(Schmidtlin, La Russie et la Pologne; Hirschelmann, Stein's Handbuch; Conversations Lexicon; Cannighich, 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:--

**Table of Public Buildings.**

| The Fortress | 1768-69 | Tressini |
| The Directory Senate | 1710 | Tressini |
| Cathedral of St. Peter and Paul in Fortress | 1712-27 | Tressini |
| The Foundry | 1753 | Schumacher |
| Summer Palace | 1742 | Rastrelli |
| Smolnói Monastery, Church | 1743 | Rastrelli |
| St. Nicholas Morskoi | 1743 | Rastrelli |
| The Anichkov Palace | 1748 | Rastrelli |
| Winter or Imperial Palace | 1748 | Rastrelli |
| Marble Palace | 1787-90 | Grimaldi |
| Hermitage, the Little | 1775 | Lamotte |
| the Great | 1775 | Felten |
| Theatre | 1776 | Quarenghi |
| Nevsky Monastery Church | 1776-90 | Starov |
| Oil Arsenal | 1776 | Starov |
| Colossal equestrian statue | 1782 | Falconet |
| Peter the Great | 1783 | Quarenghi |
| Taurida Palace | 1783 | Starov |
| Obuchovy's Hospital | 1783 | Quarenghi |
| Manège of the Imperial Guards | 1783 | Quarenghi |

Originally Prince Menzikov's palace.

A very large but grotesque pile; burnt down December 1837; rebuilt 1839.

Interior, plan of an ancient theatre. Order Corinthian.

Hexastyle Doric in centre.

A Roman Doric octastyle portico entire width of front. Sculptured pediment; ditto frieze within portico.
<table>
<thead>
<tr>
<th>Name of Building</th>
<th>Year</th>
<th>Architect</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gostinny Dvor, or Bazaar</td>
<td>1785</td>
<td>Kakorinov</td>
<td>A very handsome structure. A Roman Doric order on a</td>
</tr>
<tr>
<td>Academy of Fine Arts</td>
<td>1788</td>
<td></td>
<td>lofty arched basement.</td>
</tr>
<tr>
<td>Cathedral of St. Alexander Nevsky</td>
<td>1790</td>
<td>Starov</td>
<td>Ionic on basement.</td>
</tr>
<tr>
<td>Imperial Library</td>
<td>1795</td>
<td>Sokolov and Rusca</td>
<td>Italian style. Now used for the engineer corps.</td>
</tr>
<tr>
<td>Marine Cadets' College</td>
<td>1796</td>
<td></td>
<td>Order Corinthian; front four attached columns beneath pediment.</td>
</tr>
<tr>
<td>Palace of St. Michael</td>
<td>1797-1800</td>
<td>Brenna</td>
<td>Front 730 feet; centre Ionic octastyle on basement.</td>
</tr>
<tr>
<td>Catholic Chapel, Knights of Malta</td>
<td>1798</td>
<td>Quarenghi and Starov</td>
<td></td>
</tr>
<tr>
<td>Imperial Bank</td>
<td>1799</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Institut Domoinelis Nobles, Smolnoi Monastery</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Founding Hospital on the Moika</td>
<td>1798</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medical, &amp;c. Academy</td>
<td>1799</td>
<td>Porta</td>
<td></td>
</tr>
<tr>
<td>Troitski Church</td>
<td>1799</td>
<td>Brenna</td>
<td></td>
</tr>
<tr>
<td>Romanov Obelisk</td>
<td>1799</td>
<td>Zakharov</td>
<td></td>
</tr>
<tr>
<td>Academy of Sciences</td>
<td>1799</td>
<td>Zakharov</td>
<td></td>
</tr>
<tr>
<td>Admiralty</td>
<td>1801</td>
<td>Montferrand</td>
<td></td>
</tr>
<tr>
<td>The Casan Cathedral</td>
<td>1801-11</td>
<td>Voronikhin</td>
<td>Corinthian hexastyle [see Portico, Plans], with curved colonnades extending from it.</td>
</tr>
<tr>
<td>Russian Academy</td>
<td>1803</td>
<td>Melnikov</td>
<td></td>
</tr>
<tr>
<td>Imperial Hospital for Sick Poor</td>
<td>1803</td>
<td>Quarenghi</td>
<td></td>
</tr>
<tr>
<td>Great Theatre</td>
<td>1804</td>
<td>Thomond</td>
<td>Corinthian portico.</td>
</tr>
<tr>
<td>Birzha, or Exchange</td>
<td>1804-10</td>
<td></td>
<td>Byzantine style.</td>
</tr>
<tr>
<td>New Arsenal</td>
<td>1808</td>
<td>Dimertzov</td>
<td>Bronze. Height 82 feet.</td>
</tr>
<tr>
<td>St. Sergius' Church</td>
<td>1808</td>
<td>Dimertzov</td>
<td>Octastyle Ionic portico.</td>
</tr>
<tr>
<td>Salt Magazine</td>
<td>1808</td>
<td>Volklov</td>
<td>A most extensive range of buildings of rich design.</td>
</tr>
<tr>
<td>Church of St. Vladimir</td>
<td>1811</td>
<td>Mikhaelov</td>
<td>Corinthian hexastyle portico. Dome.</td>
</tr>
<tr>
<td>— St. Peter</td>
<td>1817</td>
<td></td>
<td></td>
</tr>
<tr>
<td>— St. Catherine, Vassili Ostrov</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>— Imperial Mews</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Isaac's Church (rebuilt)</td>
<td>1818</td>
<td>Trombara</td>
<td>Front, Ionic hexastyle, attached columns. Interior a round with 24 eplumens.</td>
</tr>
<tr>
<td>Church of the Skorybashnik (or Sufferers)</td>
<td>1818</td>
<td>Montferrand</td>
<td>Corinthian order on basement. Centre an octastyle prostyle.</td>
</tr>
<tr>
<td>Hôtel des Mines, or Mining Academy</td>
<td>1819</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Etat Major</td>
<td>1821-30</td>
<td>Rossi &amp; Bruilov</td>
<td>Previously designed by Quarenghi, and erected temporarily in timber; now executed in metal by Clarke and Pratt.</td>
</tr>
<tr>
<td>The Hall of Archives</td>
<td></td>
<td>Rossi &amp; Clarke</td>
<td></td>
</tr>
<tr>
<td>Theatre, Aplugin Island</td>
<td>1826</td>
<td>Montferrand</td>
<td></td>
</tr>
<tr>
<td>Narvsky Gate, or Triumphal Arch</td>
<td>1831-3</td>
<td>Quarenghi</td>
<td></td>
</tr>
<tr>
<td>Alexandrinsky Theatre</td>
<td>1832</td>
<td>Rossi</td>
<td>Shaft a granite monolith, 64 feet high, surmounted by a colossal figure of Faith.</td>
</tr>
<tr>
<td>Lutheran Church of St. Peter and St. Paul</td>
<td>1832</td>
<td>Bruilov</td>
<td></td>
</tr>
<tr>
<td>Alexander Column</td>
<td>1832</td>
<td>Montferrand</td>
<td></td>
</tr>
<tr>
<td>Church of St. Catherine the Marty</td>
<td>1832</td>
<td>Const. Thon</td>
<td></td>
</tr>
<tr>
<td>Michailovsky Theatre (rebuilt)</td>
<td></td>
<td>Bruilov</td>
<td></td>
</tr>
<tr>
<td>Winter Palace</td>
<td>1833</td>
<td>Bruilov and Stasov</td>
<td></td>
</tr>
<tr>
<td>Observatory</td>
<td>1837</td>
<td>Bruilov</td>
<td></td>
</tr>
<tr>
<td>Triumphal Arch</td>
<td></td>
<td>Quarenghi and Starov</td>
<td></td>
</tr>
<tr>
<td>Duke of Leuchtenberg's palace</td>
<td>1839</td>
<td>Stackelschneider</td>
<td>Grecian style.</td>
</tr>
</tbody>
</table>

PETERSFIELD, 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 52 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 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 1831 was 1660. The living, attached to the chapel of Petersfield, is a curacy, which, with the rectory of Burton, are in the diocese of Winchester.
PET

In other works, it was stated to have been incorporated by a charter of Queen Mathilda, which is also 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 are merely nominal. The borough council met twice a year, first at 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 borough council is composed of ten members elected by the tithe of Sheet; the parishes of Bury, Lyss, and Faxonfield; the titheings of Ramsden, Langrish, and Oxenbourn, in the parish of East Meon, and also the parish of Steep, except the titheings of North and South Ambersham. (Sixteenth Report of the Commissioners on Charities, p. 296; Reform Act and other Parliamentary Papers; Warner's Hist of Hampshire, &c.)

PETERWARDEIN, or PETERVARA, the principal and frontier fortress of Slavonia, the Gibraltar of Hungary, is situated in 45° 15' 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 of 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 the titheings of North and South Ambersham. It commands the Danube, whose waters bathe 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, it has an exclosure, or a belt of earth, 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 ravelins, by which it is separated on the south side from the two suburbs, or Neuast, or Neustad, and two parallel to it, with a pretentious parade, forming the whole town, which consists of only fourteen public buildings and forty-eight houses, most of the latter being only one story high. The principal buildings are an 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 Bukowitz, about a league distant, as belonging to Peterwardein. The population of the town, the two suburbs, and Bukowitz, including the garrison, is stated at 6500. The fortress is capable of containing a garrison of 6000 men. Peterwardein is connected, by a bridge of boats over the Danube (here 700 feet wide, and from 50 to 60 feet deep), with the town of Neustad, on the opposite bank. (Von Jenny, Handbuch fur Reisende in dem Oesterreichischen Grossen Einlande von W. Bihler, Neueste Ge- meinlade der Oesterreichischen Monarchie.)

PETIOLE is that part of the leaf commonly called the stalk; it is usually a contracted part of the leaf through which the petioles pass from the root, 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 endogens, 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 Catholic, born in the town of the close of 1653, was the son of the king's interpreter for the Oriental languages, and secured 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 the East. 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, under an act of the King, the tracts of Louis XIV. in Holland, which his contemporary Pellisson published in 1671. He returned to Paris in 1660, and two years afterwards was sent to Morocco, as secretary to M. de Saint Amand, who had been appointed ambassador to Maley Islamb, 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 elegance and purity of the style. In the two following years he accompanied the French armaments against Algiers, under Duquesne, Toulouse, and D'Amessville [Alaçius], 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 despatches of the three most famous Peter the Great of Russia, and the Emperor Amalia of Algiers. In 1665 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 power were going on, he had the insight being that the bey of Tripoli should pay to the king of France the sum of 600,000 livres. Peter was offered a considerable bribe if he would put down in the original treaty Tripoli cruisers instead of French galleys, which would have made a difference of a sixth part, but his fidelity to his sovereign was incorruptible. In 1667 he assisted the Duke de Mortemart in concluding a treaty of peace and commerce with the empire of Morocco. In short, it was through his intervention that all the affairs between France and the Eastern courts were transacted from the year 1660, when he was first employed in diplomacy, to the time of his death. As a reward for his eminent services, Petis was made a baron in 1683, and was named his successor to the College Royal de France, and after the death of his father (1665) the office of Oriental interpreter was also conferred upon him. From this period Petis never left his native country, but employed himself in advancing the cause of his religion 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 Ethiopean 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 Oriental languages.

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 from the Persian, Paris, 1708, 3 vols. 8vo.; 'Voyage en Perse,' translated from the Persian of Sherfed-din Ali Yedi, Paris, 1722, 4 vols. 12mo. Most of his works however still remain in manuscript; these are his 'Travels through Syria and Persia, from 1670 to 1680;' a 'History of the Conquest of Syria by the Arabs,' translated from the Arabic of Wakedi; 'The Bibliographical Dictionary of Haji Khalilah,' from the Turkish; a 'History of the Ottoman Empire,' in the same language; a 'Dictionary of the Armenian Language;' a work on 'The Antiquities and Monuments of Egypt;' an 'Account of Ethiopia;' a treatise entitled 'Jerusalem, Modern and Ancient;' and several others, the titles of which are given at full length in the 'Mémoires de l'Académie Royale de France.' 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, Mémoire Historique et Littéraire sur le Collège Royal de France, Paris, 1738, 4to.; Biographie Universelle, vol. xxxii.)

PETIT, JEAN LOUIS, was born at Paris in 1674. Littre, 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 acquired such a degree of eminence in dissection, that he was prepared to subject the preparations 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 for looking through the eyes of the cadaver. Petit became a surgeon in the army, and was in active service till 1709, 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 most 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
PET
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. PET 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 assistants were called upon to officiate in different parts of Europe, and by carrying thither his improvements and some of his zeal, gave a fresh stimulus to its progress.

PET was of his death. PET had been engaged twelve years in the composition of an extended "Treatise on Surgery." It was completed and published in 1774, by De Lesse, and is still a standard work. The other most important of his surgical writings were the "Memoirs of the Diseases of the Bones," and numerous papers published in the Memoirs of the Academies of Surgery and of the Sciences.

PETIT, PETER, was born 21st December, 1598 (Niceron), or 8th December, 1594 (Biol. Univers.), at Montlucon, 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, who held the office of the Post to his father's, and then removed to Paris. Here he was introduced to the Cardinal de Richelieu, and appointed by that monarch governor of Algiers and Tunis. He was then at the age of thirty, and at the age of forty, between this time and 1649 there were conferred upon him the appointments of provincial commissioner of artillery, intendant of fortifications, and geographer, engineer, and councillor to Louis XIII. Under his return from Italy, he was commissioned to conduct a critical examination of the "Dioptrics" of Descartes, which led to his being introduced to Fermat, who had also questioned the soundness of the Cartesian theory. Subsequently however he became very much interested in the subject, and set to writing some of his important works. In 1646 to 1647, a series of experiments made by Pascal and PETIT confirmed the explanation then recently given by Torricelli of the phenomena of the barometer and communication. PETIT died 20th August, 1666, at Lognon on the Marne, about five leagues from Paris.


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 courts of France and Belgium. The petitioner states certain facts as the ground on which he prays for the order and direction of the court. Petitions are either causas petitions or not. A cause petition is a petition in a matter of which the court has no ready possession for it, whether by the suit concerning the matter of the petition; and the petitioner is generally either a party to such suit, or he derives a title to some interest in the subject matter of the suit from a party to it. When there is no existing matter of the petition, it is called an ex parte petition. Some cause petitions are called petitions of course, and P. C., No. 1107.

relate to matters in the ordinary prosecution of a suit, and before a decree. Such petitions are granted upon application of the party petitioning; and they may be presented at any time, whether the cause is pending or not. They are not answered when presented, in the same manner that other petitions are; but the order to be made on such petition (if presented at the Rolls) is at once drawn up by the secretary of the master of the Rolls, unless they are petitions for re-hearing. Such petitions may also be presented to the lord chancellor.

Other petitions in a cause, which are not petitions of course, and may be called special petitions, have for their object to carry a decree into execution, or to protect a person's interest in a fund in court, a legatee for instance who was a minor when the decree was made, may, when he is of age, apply by petition to have his share paid to him, because his interest in the fund is connected to it; he may also object to a decree to have his petition to have his interest in the fund, or by a master's report which has been confirmed. The nature of the petitions in a cause will of course vary with the subject-matter of the suit.

Petitions, not in a cause, are of various kinds, and many of them are presented under the authority of particular acts of parliament. These also are called special petitions. Thus a petition may be presented for the appointment of guardians to infants, and for an allowance for their maintenance; for the purpose of the parties' obtaining the patent or register of beneficial estates and mortgages may be presented; conveyances; and for various other purposes. In matters of lunacy, the form of proceeding in the first instance is by petition to the chancellor, on whom the petition is presented for his opinion, which is directed to the crown, and the prayer of the petition is for a commission to inquire into the state of mind of the alleged lunatic, [Lunacy.] In subsequent proceedings relating to the property of lunatics, the petition is the regular and usual course of proceeding, and suits are not commenced or defended for the lunatic without the previous approval and direction of the court.

All special petitions must be presented to the court to which they are directed, in order to be heard and answered: until they are answered, the court is not fully possessed of the matter of the petition. The answer, which is written on the copy of the petition and signed by the judge, requires the attendance before him of all parties concerned in the order of the petition at the hearing thereof. It is the business of the petitioning party to serve all proper parties with notice of this petition, and the answer to the petition becomes an order of the court. If the party appearing at the hearing of the petition chooses to serve with the petition, to attend at the hearing of it; and if such person be absent at the hearing, he will be bound by the order made on the petition. Service of the petition is by personal service or by service of the clerk in court whose attendance the petitioner thinks necessary, or to the party himself. In some special cases, the petitioner is permitted, on special motion, to be served by affidavit, or to be served personally, to leave the copy of the petition at the party's house with one of his family, and this will be considered good service. Special petitions frequently required to be supported by affidavits of the petitioner or some other person, or of both; and such affidavits may be filed at any time after the petition is answered. If a petitioner choose to serve a party with a petition, whose presence is considered by the court to be unnecessary, he must pay 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 affidavits filed in support of the petition, if any. If the counsel for the petitioner in 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 before the court. The party who has made the matter of the petition and the affidavits on both sides, the court either dismisses the petition or makes such order as it thinks fit. The order when made is drawn up, passed, entered, served, and enforced in the same manner, if in the same 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 except the prayer.

PETITION OF RIGHT. Where the crown or a subject has a cause of action against a subject, the ordinary mode of putting that cause of action into a course of legal
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 mode of proceeding is provided in the common law 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, the facts alleged by the petitioner, and that by the petition, do not in point of law entitle the plaintiff to the remedy which he claims. The question of law thus raised by demurrer to the petition is argued before the lord chancellor. The crown however, notwithstanding the finding of the court in point of law, or, adjudging them to be true, may allege other facts which show that the plaintiff is not entitled to what he claims. To such facts the plaintiff must reply. Any issue of fact joined between the parties is to be determined by the lord chancellor, or, as formerly, judges of 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 plaintiff according to the result of the argument upon the demurrer or the trial of the issue.

If the plaintiff in his petition pray that the investigation may take place in a particular court, and the royal indorsement on the petition directs that course to be pursued, he does not place himself in the same case as indicated by the indorsement, instead of the Court of Chancery.

Before the abolition of the feudal tenures by the Commonwealth (confirmed after the Restoration, by 12 Car. II., c. 24), the rights of the crown and of the subject being often brought into collision, occasions for proceeding by petition of right were very frequent, and as this mode of proceeding was dilatory and expensive, two acts, passed in the reign of Edward III., enabled parties aggrieved in certain cases by legal proceedings of the crown, to challenge those proceedings, without being put to their petition of right, with its expensive commission to inquire. This new course was called a 'traverse of office,' where the subject traversed an act of the crown, and by producing a record constituting the king's title, and a 'monstransse de droit,' where the facts upon which the king's title rests are admitted but their effect is avoided by the allegation of other facts showing a better title in the claimant. In modern practice the petition of right is not resorted to, except in cases to which neither a traverse of office nor a monstransse de droit applies, or after those remedies have failed.

The petition of right is supposed by Lord Coke and others to be so called because the investigation prayed for is demandable of right, and not granted as a matter of grace or favour; but the Latin term 'petitio justitiae' shows that the prayer is to be resorted to 'justly.'

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 acknowledged by the crown. These had long been a matter of common law, and had been solemnly recognised 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 secured, they implored the king not to compel 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 do, to the impounding of all the law of the land, or by due process of law, and not by 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 procuring 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 willath that right be done according to the laws and customs of the realm, and that the statutes be put in execution.' This answer was unsatisfactory, and the Commons, in a large and plain of 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 was unsatisfactory, and the Commons, in a large and plain of 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.'

PETITIO, 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 were conjointly made, and so successful that they attracted many colours which they knew not how to prepare for fire, 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 was in Rome. After they removed a few years, that they perfected it.

In London they became acquainted with Sir Theodore Mayer, first physician to Charles I., and an intelligent chemist, who was perhaps the first to discover the principal colours proper 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 retained him in his palace and gave him apartments in Whitehall. He painted the portraits of Charles and the royal family several times, and copied many pictures, after Vandyck, which are considered among his finest works. He received a medal for his art, 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 gave him 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 Therese. He also painted some of the most celebrated pictures of Mignard and Lebrun.

Petitot, who was a zealous Protestant, dreading the effects of the revocation of the Edict of Nantes, solicited leave, but it being refused, he went to Paris, and after an interview of some months, 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 Berne, 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 who was his first biographer, published in 1671, a collection of the portraits 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 of fifteen thousand plates, the largest and most valuable of this kind in the world. He was buried at Aix, in the church of St. Saviour, in the possession of the earl of Hardwicke. This enamel is nine inches and three-quarters high, and five-quarters wide, 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 1642. This work was some years ago discovered in the late Mr. Bone, the enamel painter and goldsmith, at Eton, and was 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 Petitto received twenty guineas for this plate, and Petitto told how that his price was 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 entire surface of the plate. This plate was 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 worked up to the plate. He copied those of Louis XIV. from the best portraits of him, but generally obtained one or two sittings for the completion.

The pictures which Petitto painted in England are executed in a 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 painting, for though subjects of flowers and fruits 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 brought it into general use. The tone of 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 his work was not equal in execution to that of his father. (Walpole's Anecdotes of Painting, by Dallaway; Biographie Universelle.)

PETRA (Phi rais, or el Bersah), which lay nearly half way between the Dead Sea and the head of the Elanitic 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 Sela (σηλα) of the Old Testament, which signifies, like the Greek word, a rock.' This town, which originally belonged to the Elomites, was taken by Amaaziah, king of Judah, who changed its name into that of Joktheel (2 Kings, xiv. 7; compare Joseph, Antig., ix. 9, § 1); but it seems in later times to have belonged to the Moabites. (It., xvi. 1.)

Petra is described by Strabo (xvi. 779) and Pliny (Hist. Nat., vi. 92) as situated on level ground about two miles in size, and surrounded by precipitous mountains. The town itself was well watered, but the surrounding country, and especially the part towards Judea, was a complete desert. It was 666 Roman miles from Gaza, and three or four days journey for them from Petra. 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 Strabo, Athenodorus, has preserved a description of Petra for many years, informed the geographer that many Romans lived there as well as other foreigners. (Strabo, xvi. 779.) It maintained its independence against the attempts of the kings of Syria (Diod. Sic., xiii. 95-97), and was governed by a native prince in 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 after his name the province of Arabia Petraea.

The ruins of Petra still exist in the Wady Musa, two days' journey from the Dead Sea, and the same distance north-east of Akaba. They were visited by Bureckhardt in the year 1812, by Captains Ibbi and Mangies in 1816, and more recently by Mr. Burtick. Bureckhardt's account is brief and hasty, but a minute description of the ruins has been given by Captains Ibbi and Mangies, from whose account we extract the following remarks. The principal entrance to the town has been through a way cut in the rock; or, as it is formed by the passage of a small rivulet through the rocks, which in some places approach so near to one another as only to leave sufficient room for the passage of two horsemen abreast. The way extends for nearly two miles; and on each side of it there 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. Nearly at the termination of the valley there are the ruins of a magnificent temple.

Entirely cut out of the rock, the immense embellishments of which, wherever the hand of man has not purposely effaced them, are so perfect that it may be doubted whether any work of the ancients, except perhaps some on the banks of the Nile, have come down to our time so little injured by the lapse of ages. There is in fact scarcely a building of forty years' standing in England so well preserved in the greater part of its architectural decorations. After passing this temple, the valley conducts to the theatre, 'and then the whole of the city presents itself in its full grandeur, shut in on their opposite sides by barren craggy precipices, from which numerous ravines and valleys, like those we had passed, branch out in all directions. The sides of the city are formed with a endless variety of excavated tombs and private dwellings disposed altogether the most singular scene we ever beheld, and we must despair of giving the reader an idea of the singular effect of rocks tinted with the most extraordinary tints, whose summits present to us nature in her savage and romantic form, while their bases are worked out in all the symmetry and regularity of art, with colonnades and pediments, and ranges of corridors adorning to the pet penduline surface.'

The best description of the ruins of Petra is given in Laborme's 'Voyage de l'Arabie Petrea,' Par., 1830, of which an English translation was published in 1836.

PETRACCA, Pietro. Pietro Petracco was born in Arezzo, in July, 1304, 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 name of Petracco was Francesco di Petracco, or Petracco, and表白 the son of Francesco Petracco, who afterwards changed into the more euphonious name of Francesco Petrarca. After losing all hope of being restored to his native town, Petracco removed with his family to Avignon, where Pope Clement X. and fixed his residence. The court of Avignon was considered the most probable asylum. Young Petracco however had little taste for the court, especially as it was taught in that age, and he devoted much of his time to reading and copying MSS. of ancient writers. His father and mother having settled 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 be considered as a company of the Papal residence. The Papal court of Avignon was very gay and even licentious; and Petrarca, who was then only two and twenty years of age, and of a handsome person, was not insensible to the gayeties of that court. 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, a noble and other distinguished men, who were fond of learning, and who supplied him with books, a scarce and expensive commodity in those times. Petracco accompanied the bishop of Lombe to his diocese at the foot of the Pyrenees, where they 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 (Triumf d'Amor, ch. 4). On his return to Avignon, the bishop of Lombe gave Petracco 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 from Avignon 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 warrior spirit, and was desirous to be addressed to him, as 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 son to that of the legate against the Jews of Cremona, Ross, became acquainted with Petracco, and prevailed on him to act as his advocate at the Papal chancery. Petracco undertook the cause and won it. Azzo had brought with him Guglielmo Panfretto, a learned man of Verona, the author of a work 'De Originalibus Rerum,' a kind of his
torical dictionary in alphabetical order, which is considered the first specimen of that kind of work. Petraeus formed an intimacy with Pastrengo as well as with the Calabrian monk Barlaam, who came to Avignon on a mission from the emperor Andronicus the younger, and from whom he learned the rudiments of Greek. But before this time an incident had occurred which exercised a powerful influence over Petraeus’s life.

The 20th of April, 1327, while he was attending service in the church of St. Clair, at Avignon, he was struck with the beauty of a young lady who was to be near him, and he conceived a violent passion for her. The lady’s name was Laura. According to the recent opinion, supported by the researches of Petrocchi, Petraeus himself mentioned her family name, she was the daughter of Andibert of Noves, a small place in the territory of Avignon; she had a considerable fortune, and had been married twice to two Hugh of Sade, a gentleman of Avignon: when Petraeus first saw her, she was nineteen years of age. The attractions of Laura’s person have been so fully described and probably exaggerated by Petraeus, that it is needless to say anything on the subject. But those who read the passage 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, and, before 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. 6 Petraeus’s ‘Virgil,’ with this affecting memorandum, is now in the Ambrosian library at Milan. (Valery, Voyageurs Littéraires.)

Here begins a new period of the life of Petraeus, and with it the second part of his love poetry. Hitherto he had written verses in praise of Laura; he now wrote verses on Laura’s death. Let us begin the story with Petraeus himself in person. At the close of a long and fruitful life, he was after all an Avignonese, and his spirit; he describes her appearing to him in the midst of the night, comforting him, and pointing to Heaven as the place of their next meeting. (Sonnet beginning Lamentati mea pueratur, and the other III ministret amantis.) This delusion, if delusion it be, is the last remaining consolation of impassioned minds which have lost all that they valued in this world; and it has at least one beneficial effect, that of rendering life bearable and pursuing despair. The second part of Petraeus’s poetry is superior to the first in purity of feeling and softness of thought. He himself felt this, and blessed the memory of her who, by the even tenour of her life, had been the means of calming and purifying his heart.

Benedetta colui che à migliore rive
Volz il mio core, e tempie voglia avventura
Luogando adoro perfecim le lampade.

More than twenty years after Laura’s death, when he was himself fast verging to the grave, and when he was able to think of nothing more profound, he drew from his memory a picture of the heart, the principles, 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 happiness of despising the world. She exhorts him to a well spent life, she tells him that when she died she felt no sorrow except pity for him. On Petraeus entreating her to say whether she ever loved him, she evaded the question by saying that although he was particular in his love, she could not bear to lose him. He persevered by his passion by the coldness of her looks, 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 alternation of kindness and rigour that I have led thee, sometimes happy, sometimes unhappy, often weared in truth, but still I have led thee to where there is no more danger, and I have thus saved us both. There has been little difference in our fortune, but thou dost proclaim thine to all the world, and I concealed mine. But complaint does not embitter suffering, nor does silence soften it."

"Tu mi sì tuoi, perché al l'eternità; non maggiore per andarvi l'amare." (Ti amo della Morte, ch. ii.)

We have dealt 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 without understanding Robert, the unlettered Frenchman, astonished at the passion of Petrarch for Laura; 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 Petrarch for Laura was real and lasting; 2. that Laura's conduct was above suspicion. What our inward feelings were towards the poet we have no means of knowing and Petrarch himself does not seem to have ever 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 Petrarche, known to us as Laura de Sade, and Laura de Sade, and her portrait, and she was long in favour of that identity. (De Sade, Mémoires pour la Vie de F. Petrarche; Foscolo, Essays on Petrarch; Baldelli, Del Petrarcha e delle sue Opere, 2nd edition, Fossolo, 1837; and the article "Laura de Sade" in a lover of literature and a historian of art.)

But the life of Petrarch was not spent in idle though eloquent waftings. He was an active labourer in the field of learning, and this constitutes his real merit and his best titles to fame. Besides the works which he wrote, he encouraged literature in others, and he did everything in his power to promote sound studies. Petrarch was a great traveller for his age; he visited every part of Italy, he went seven times to the Sea of Marmora, wrote to San Marino, and three times to the Alps. Wherever he went, he collected or copied MSS., and purchased medals and other remains of antiquity. At Arqua he discovered the "Institutions" of Quintilian; at Verona, Cicero's Familiar letters; in another place, the epistles to Atticus; at Lige 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 brought to light. The solemn ceremonies of his birth were handed down to us. (Rerum Memorandarum, 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, and paid on himself magnificent diplomatic and public duties throughout the court. (Epistolae Senilis, b. xv. ep. 5.) He was the friend and instructor of Boccaccio, John of Ravena, 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 admiration of antiquity and of the ancients was not tempered 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 him. Petrarch was sent as a proctor in arms to Spain, and to������as entitled to be again what she had once been, the mistress of the world, as if the thing were possible, or even desirable. This error he perpetuated by his writings, and his actions, and I believe it to be real classical tendency of recollections and aspirations which led astray many Italian minds. As aspiring to be what they cannot be again, they have lost sight of what they might and ought to be as members of the great modern European family.

Petrarch acted not only in the affairs of state of his time. His influence over the great and powerful is one of the most extraordinary parts of his character, but it is a well ascertained fact. He enjoyed the friendship of several popes, of the Correggio lords of Parma, of the Colonna of Rome, the Visconti of Milan, the Carrara of Padua, the Gonzaga of Mantua, of Robert, king of Naples, and Charles IV, emperor of Germany. He was invited in turn by them all, was consulted by them, and was employed by them in several affairs of importance. He was sent by the nobles and people of Rome to the imperial court of Charles IV, in order to prevail on that pope to remove his residence from Avignon to Rome. He afterwards wrote a Latin epistle to Urban V., Clement's successor, urging the same request, and the pope soon after removed to Rome, at least for a time. In 1344 he was sent by Robert of Naples, to invite the emperor to come there and receive the imperial crown as a reward of his poetical merit. Petrarch accepted the invitation, and, embarking at Marseille, landed at Naples, where he was received with great signals of honour. In 1345, by his reputation, held a public examination in presence of all his court during three days, in which various subjects of science and literature were discussed. At the termination of these meetings, King Robert publicly proclaimed Petrarch to be deserving of the laurel crown, and sent an orator to accompany him to Rome to attend the ceremony, which took place on Easter-day in the year 1341, when Orso dell' Anguillara, senator of Rome, crowned the poet in the Capitol, in presence of a vast assembly of spectators, and in the midst of loud acclamations.

Petrarch had ecclesiastical benefices at Parma and at Padua, which were given to him by his patrons of the Correggio and Carrara families; he seems to have been well received in both these towns. From Padua he sometimes went to Venice, where he became acquainted with the Doge Andrea Dandolo, who was distinguished both as a statesman and as a lover of literature and a collector of antiquities. Petrarch wrote a letter to Dandolo from Padua, in March, 1351, in which he deprecated these hostilities between two Italian states, and exhorted him to peace. Dandolo, in his answer, praised his style and his poetic love of peace, and he defended the right of Venice, after the provocations that she had received from her rival. In the following year, after a desperate battle between the fleets of the two nations in the Gulf of Cassone, wrote a letter to the Doge of Genoa, in which he then was, to the doge of Genoa, for the same laudable purpose, that of promoting peace. In the next year, 1353, the Genoese fleet was totally defeated by the Venetians off the coast of Sardegna; and Genoa in its humiliation sought the protection of John Visconti and Robert, the Duke of Milan, the most powerful Italian prince of his time. Petrarch was staying at Milan as a friend of Visconti, who had made him one of his councillors, and as such he was present at the defeat of the Genoese, and at the act of surrender. In 1354 Visconti sent Petrarch on a mission to Venice to negotiate a peace between the two republics. He was received with great distinction, but failed to conclude the treaty. The subject of the war and the measures of the Genoese were discussed, and his three nephews divided his dominion amongst them. The youngest and the best of them, Galeazzo, engaged Petrarch to remain at Milan near his person. In November, 1354, the emperor Charles IV. arrived at Mantua from Germany; and he wrote to Petrarch, who had been in correspondence with him before, to invite him to his court. Petrarch repaired to Mantua, spent several days with the emperor, and accompanied him to Milan. Petrarch wished to secure his presence in Italy, but the emperor, after being crowned at Milan and at Rome, hastened to return to Germany. However, before he left Italy, peace was proclaimed between Venice and Genoa. In 1356 Petrarch repaired to Pisa, to receive the crown of Pisa, and to the court of the Duke of Milan, whom they suspected of hostile intentions towards them. He met Charles at Prague, and having succeeded in his mission, he returned to Milan. In 1360 he was sent by Ga- leazzo Visconti to Padua, and the following year to John on his deliverance from his captivity in England. In his 'familiar epistles' he describes the miserable state of France, and the traces of the devastation perpetrated by the sword and the rapines of the Barons and the dauphins, and after three months spent at Paris, he 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 paid for, and which committed the greatest outrages, and the plague which they brought with them into Lombardy, were the reasons which induced Petrarch to remove to Padua. In 1364, 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 Beccaccio, who spent three months in his company. Petrarca passed several years at Venice, here received his pension from the Venetian Republic, and then making excursions to Padua, Milan, and Pavia, to visit his friends the Carrara and Galeazzo Visconti. In 1339 he was present at the marriage of Galeazzo's daughter Virginia, and was himselfconfirmed in his residence at Rome, and who wished to become acquainted with him. Petrarca had a great esteem for Urban's chancellor and he esteemed notwithstand his age and his infirmities, on a journey to Rome; but, on arriving at Ferrara, his strength failed him; he fell into a swoon, and remained for thirty hours apparently dead. Nicholas d'Este, lord of Ferrara, and his brother Henrico, who had taken care of him, restored him 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 of the heart, and his physicians were of opinion that this was the only residence of the numerous houses which he had at Parma, Padua, Venice, Milan, Vauc sole, and other places, which still remain, and is shown to travellers. In this retirement he resumed his studies with fresh zeal. And when he wrote his book De sui ipsi et multiorum aliorum Ignorantia, intended as a rebuke to certain Venetian freethinkers who, inflamed with the learning which they had gathered from Averroes' Commentaries on Aristotle, composed a Latin treatise on the same subject, translated into Italian, sneered at the Mosiac 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 received them happily with pleasure; they were accomplished 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 had no great gift for natural history, in which his visitors 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 scandalised at being thus discouraged in their studies, and they offered Petrarca 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 was agreed about, and made not a little 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 antagonists. With regard to Aristotle he says what others have said after him, that 'he was a great and powerful man,' but 'knew nothing of the history of the world.' As for Averroes, who discarded all revelation, and denied the immortality or rather the individuality of the human soul, Petrarca urged his friend Father Marsili 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 Urban of Bologna, Nicola Vernia, Agostino Nino, Alessandro Achillini, Pompomaccio, and others, were imbued with and propagated 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 air of the 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, Clement 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 trembling and the sweat of fear, and his physicians gave him medicines which made him torment himself. He wrote 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 been taken care of by his own soul, to make himself more comfortable, he should feel grateful, though he felt that he was not long for this world, for he was wasting away to a shadow. He was not in want; he kept two horses, and general his six amusements, though only three of them, in 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 and self-styled guests, and he did not behave towards them as a miser. He wished to build a small oratory to the Virgin Mary, but he must sell or pledge his books for the purposes.' (Petrarca Epistolae, the 43rd.) Some months after his return from Rome, in January, he wrote to his friend Matthew, archdeacon of Lodi, saying, 'I have been in Rome these two years, being given up several times, but still live. I have been for some time at Venice, and now I am still there. I am 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 have spent the greatest part of the time in the country. I read, I think, I write; this is my existence, as it was in the prime of my youth. It is astonishing that having studied so long, I have learnt so little. I hate no one, I envy no one. In the first season of my life, a time full of error and presumption, I had a great many affairs, and in my younger age I despised myself alone; in my old age I despise almost everybody, and myself most. Not to conceal anything from you, I have had repeated invitations from the pope, the king of France, and the emperor, but I have declined them, preferring my liberty to sit.'

In September, 1373, peace was made between Venice and Francis de Carrara, lord of Padua. One of the conditions was that the latter should send his son to ask pardon and swear fidelity to the republic. 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, he published a book on the occasion, called La teranda, which he dedicated to his patron and friend Francis de Carrara.

The following year he again grew worse, and a slow fever consumed him in the month of April. He went to annual 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 their master was quite dead. The news of his death soon reached Padua. Francis de Carrara, accompanied by all the nobility of the place, went to Arqua. The mayor and the clergy repaired to Arqua to attend the funeral. Sixteen 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 an ornamental 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:

Πέτραρχα \[PETRARCHA\]

Honesta luce, \[honest luce, \]

Nil mihi visibilis est, \[nihil mihi visibilis est, \]

Latius name abe. \[Latius name abe.\]

Petrarca had had two natural children, a son and a daughter. The son died before his father. The daughter, Tulla, married, in her father's lifetime, Francesco da Brossano, a senator of the genus and of the name of his heir. He left legacies to various friends, and among others to Boccaccio, who did not survive him long. The portraits of Petrarca are numerous, but they differ from one another; that which is considered the most authentic is at
Padua, in the Episcopal palace, above the door of the chapel. It is a short poem, ten lines, styled "Triolet," in the wall of the house of Petrarca at Padua, when it was pulled down in 1881. (Valéry, *Voyages Littéraires*.) An engraving of it is given at the head of the handsome edition of Petrarca's verses by Marsand. The works of Petrarca are of three kinds: 1, his Italian poetry, chiefly concerning Laura; 2, his Latin poetry; 3, his Latin prose. His Italian poetry, called 'Il Canzoniere,' or 'Rime di Petrarca,' consists of above 300 sonnets, about fifty canzonets, and three short poems, "Trionfi," "Triomfo de l'Amore," 'Triomfo della Morte,' and 'Triomfo della Fama.' Petrarca's 'Canzoniere' has gone through more than three hundred editions, with and without notes and commentaries. This was written chiefly to his friends and to his host Marsand, who died in Padua, 1319-20, with a biography of Petrarca, extracted from his own works. The character of his poetry is well known. Its greatest charm consists in the sweetness of numbers, 'enlivened 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 wearying the ear. His canzonets (a species of composition containing 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 line, without the aid of the repetition 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, who discusses the musical melody in the sonnets and canzonets which Petrarca addressed to Laura flowed so melodiously, that even the most grave could not refrain from repeating them. Petrarca poured forth his verses to the sound of his lute, or to the accompaniment of a stringed instrument. 'The voice was sweet, flexible, and of great compass.'" (Foscolo, *Essay on Petrarck*, 'On the Poetry of Petrarck.') That in Petrarca's sonnets there is too much ornament, that he indulges in ornamental or rhetorical figures often forced, and his hyperboles almost puerilis, 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 accessories which he brings before the mind of the reader, that he awakens many associations and recollections 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 which he wrote to Laura in his last days and even after her death, 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 Horace and Virgil. His Latin poems have been translated into the Italian language, 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 and still are used in the written language. Par 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 exquisitely. Dante nerves our hearts against adversity and oppression; Petrarca wraps us in soft melancholy, and leads us to indulge in the error of crying upon the affects of others, and his poetry, chaste though it be, is too much the mirror of the three wise virgins 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 transitoriness of worldly objects, may even have a beneficial moral influence. There are some of his canzonets 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 "Odo a te," which is one of the most beautiful in all love poetry. Petrarca's "Epistle to the Africans," an epic on the exploits of Scipio in the second Punic 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 Buolies, which are acknowledged by himself to be allegorical, and were in fact, like Boccaccio's *Celebri* and *Satyr to the holy shrines*, and especially against the Papal court of Avignon. Dinguard, in his 'Histoire Littéraire,' and others, have endeavoured to find the key to these allegories. The sixth and seventh eclogues are evidently directed against Clement VI., and the twelfth, entitled 'Conflitiation,' has also some violent invectives against the Papal court. This circumstance has been supposed to explain that Pope, as the event of the sixteenth and seventeenth centuries, as the result of the pastors of the church, an enemy of the church of Rome, belonging to some supposed secret society. We know from Petrarca's own letters, especially those styled 'sine titulo,' that he spoke very forcibly against the encroachments of the Papal court, and the vices of the Papal court, which he called the modern Babylon, on the Babylon of the west. 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 adversaries and the enemies of Rome. Petrarca, 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. This was the spirit of the time. We may 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, and it was at the height of the period of the loathing of the very name of heretic or schismatic. The influence of the veneration 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 that Church. Petrarca 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 national or rural pride. When he wrote his "Eclogue," he 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 immorality of the Jews, to which he compared the residence of the popes at Avignon. Of several popes, such as 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 1340, and, as he states in his letters to the Venetian ambassador, "in the hope 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 only got over for his sins. He makes some account of that jubilee, and of the vast number of pilgrims who resorted to Rome on the occasion. After having visited the churches and performed his devotions, he wrote that he had now become free from the plague of superstition, which had tormented him till then, and that in looking back to his past life, he shuddered with shame. (Epistolae Seniltes, viii. 1.) So much for those who would persuade us that Petrarca was a.sacculated heretic. His hostility was local and personal; it was directed against Avignone, and not against Rome; against the corrupt dignitaries of the church, not against the Church itself. Petrarca however, although religiously disposed, was not a good monk for his sins. He expresses some thought of turning monk, is a lasting monument of sound religion and good sense. The Latin Epistles of Petrarca are the most important of his prose writings. He has no Italian work which except 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. Dante's letters and speeches embrace a stormy and confused period of nearly half a century, for the history of which many of them afford ample and trustworthy materials. Petrarca was one of the earliest and most enlightened travellers of modern Europe; he was
PET

40

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 scattered MSS. in various libraries, and have not been collected. They appear to have been written in order of time. Those which have been published are classed as follows:—1. Petrarca's letters to Felice Ariosto, in viii. books; 2. 'De Rebus Semilibros,' written in Petrarch's old age, in xxvi. books; 3. The 'Ad Virginitatem,' in which he says, 'It was so familiar to my ears, and so familiar to my learning, that it was to be odious to the world, especially in times of corruption, he had taken the precaution of writing the Elegies in an ambiguous kind of style, in order that their real sense might be hidden even from the few, and that for a similar consideration he now has collected in one separate book certain letters written to various friends at various times and upon different occasions, in order that they might not be scattered through the body of his correspondence, and be the means of having 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's influence on Italian literature is due to the fact that he was a private collector of Elegies, and that he was the first to publish a complete edition of the works of Petrarch. His influence on the Renaissance was immense, and his works were widely read and studied. His influence on the modern world is still felt today.

The genius Procellaria of Linnæus 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 Lind, to which family so many ornithologists have referred the Petrels, will be found the opinions of most of the leading writers who have written upon the subject.

The Prince of Musignano (Geographical and Comparative List, 1838) makes the Procellariae the thirty-fourth family of the birds, and places them between the Lardari and the Procellarii. The Prince of the Procellariae (European and American only) consists of the genera Diomedea, Procellaria, Puffinus, and Thalassidroma.

Mr. G. R. Gray (List of the Genera of Birds, 1840) makes the Procellariae the thirty-fourth family of the birds. This subfamily comprehends the genera Puffinus, Puffinus, Thalassidroma, and Procellaria.

In the Procellariae, the genus Puffinus is the most important, and is divided into the following sections:

1. Puffinus propius called.

Procellaria glaucilla.

2. Procellaria Puffinus, Anglarum, and obscura.

3. Swallow-tailed Petrels (Pteropus and noddies).

Procellaria Pelagica and Leachii.

In the 4th part of his 'Manuel' (1820), Lamarck admits the genera Procellaria, Puffinus, and Thalassidroma.

Puffinus (L. peregrinus). This is the genus Haladroma of Illiger, and the genus Puffinaria of Lesson.

The author 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 Lecèdrepé, from which the name is derived. Since then he has come to the conclusion that the Latin names of these genera are not distinct, he has observed to exist between the characters given by these authors and those which he cites, and he further says that he has seen nothing of the small membranous and dilatable pouch, which ought to exist under the lower mandible. The sole species added to be recorded is Puffinaria Garnotii, Less. (Zool. de la Coq., p. 46; Procellaria urinatrix, Gmel.)

Mr. G. R. Gray gives Procellaria, Gm., Haladroma, Ill., and Puffinaria, Less., as synonyms of Puffinaria; and refers, without a query, to P. Utrinaria, Gm. (Forst., Durae, t. 88—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 demi-bill composed of two pieces, furnished with feathers at the base up to the nostrils, which are very open, forming an oval cusp, 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 demi-bill goes beyond the lower mandible, and terminates at the narial aperture. Bill, w.h. very much curved, and very robust. The lower mandible is formed equally of two soldered pieces; that of the edge is narrow, inserted in the upper demi-bill; that below is formed by

* In the article Lardari, vol. xlii., p. 333, right-hand column, line 26 from the top, in 'Herondelles,' read 'Hirondelles.'
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. *Tuss* small, nearly equal, pointed, formed of twelve feathers. *Tarsi* moderate, weak, furnished with small arodeated scu- tella; three anterior toes enveloped in an entire membrane; hind toe wanting.

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 gloss; the lustrous white on all the under parts of the body are the two colours which it presents. Beneath the wings, as well 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 *Greffes*. 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 dentillated on its edges; the stomach large and ovoid, and occupied by a subcircular cavity, measured from the cardinal to the pyloric orifice three inches and some lines. The intestine, which forms many duplicatures, or folds, is from 21 to 22 inches long. The two ceca are scarcely perceptible. The stomach was full of an oily grey matter, and its internal surface was covered with mucous follicles: the very small gizzard is composed of muscular fibres united by a cellular tissue not of a close texture. The liver, which has not much volume, is divided into two parts. The spleen is very small. The pancreas is but little developed. The testicles were rounded, yellow, and of the size of peas. The larynx, which is three inches long, has no partition in the lower portion, whence M. Garnot concludes that there is no lower larynx; two muscles are there fixed. The heart is small.

**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 repose on 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* and that they lay their feet very nearly possesses, and the *Greffes*, whose port and habit of diving it has; and hence he proposes for it the name of the *Grebe-Petrel*. The parts between Sangallan and Lima are the localities mentioned by M. Garnot.

---

Mr. Darwin noticed *Puffinus Brevordii* as one more example of those extraordinary 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. C.*, No. 1108. *P. C.*
PET

into the latter end of August or beginning of September; and from accounts then lately received from navigators, he observes that he has reason to imagine that, like the Storm-flies, they are found only on the coast of the Atlantic Ocean. He says he inhabits also the Orkney Isles, where it makes its nest in holes in the earth near the shelves of the rocks and headlands; it is, he says, called there the Lyre, and is much valued, both for its meat and the amount of its nest as food for the birds in winter. The inhabitants, he adds, take and salt them in August for winter provisions, when they boil them with cabbage: they also take the old ones in March; but they are then poor, and not so well tasted as the young, and he makes them for appearance only in very extraordinary cases.

Mr. Selby (Illustrations of British Ornithology,) who gives Lyre, Sheerwater, and Seroba as the provincial names of the bird, remarks, that from the accounts transmitted to us we are not entitled to quote the extended range of this species, that the Orkney Isles, is unstable to say whether it is now to be found there; but he states that it is still abundant in the Orkneys, where it breeds in holes scratched in the earth that fills up the interstices of the rocks and bold headlands, and is, according to Low, the main object of pursuit with the Rockmen, who endanger their lives in climbing the most awful precipices for the eggs and young of water-fowl. 'Like the rest of the genera,' he says, 'Mr. Selby notices, the white egg, of a rounded form, being equally obtuse at both ends, and not inferior in size to that of a domestic fowl. It arrives at its breeding station in February or March; and sometimes in August, its young is able to fly, desirous for the open ocean, as the winter approaches, in a southerly direction towards the coast of Spain, the Mediterranean, &c. In Britain it is almost entirely confined to the western coast, being of very rare occurrence on the eastern.'

Mr. Selby, who has only met with one individual, which
was shot upon an excursion to the Feroe Islands. The same author thinks that Willughby and Pennant are mistaken in attributing the stillness observed in the Gulf of Man during the day to the absence of the birds at sea, the real cause, in Mr. Selby’s opinion, being the repose of the birds in their burrows to prepare for their activity at evening twilight and morning dawn.

Gio (Birds of Europe) remarks that it is evident Mr. Selby is not aware that this species is, during the summer months, nearly as abundant on the coasts of South Wales as it formerly was in the Calf of Man. Four dozens, apparently captured by hand, were sent to Mr. Gould from this coast, under the signature of Mr. Selby, and as late as 1793. It appeared from the information obtained by him, that the birds visit these localities for the purpose of incubation during the early part of the spring, when they return to deserted rabbit-burrows, crevices of the rocks, &c., wherein they deposit their single white egg, and the birds then fill an easy prey to the fishermen and others. He further says that they retire southwards, after the breeding season, even beyond the Mediterranean, where, in consequence of the increased temperature, they find a greater supply of food. The coasts of Norway and the shores of the Baltic, he adds, although not without the presence of this species, appear to be more frequented by it than our own northern islands. Temminck, in the 2nd part of his ‘Manuel,’ mentions Ireland as one of the localities, and notes the species as found on the coasts of Norway, according to the testimony of some voyagers, but not in the Baltic, and rarely on the coasts of Holland and France. In the 4th part of the same work, he states that it is common in the Feroe Islands; and that it migrates in more or less considerable numbers along our maritime coasts, mentioning it as rare in Ireland, and as not visited by it the coasts of Norway and Iceland. He says that it is common on the banks of Newfoundland, and that it is also found in the south, for it is accidentally seen in the Mediterranean.

He received an individual killed on the Bos-

phorus, and another from the Adriatic; the only difference was in the slenderness of the bill as compared with northern specimens. Mr. Gould figures three species in his great work (Birds of Europe): the bird above described; the Dusky Shearwater (Puffinus obscurus); and the Cinerous Shearwater (Puffinus cinereus), Stephens. With regard to the last, Mr. Gould remarks, that if it should ultimately appear that the bird obtained by Mr. Strickland from the Tees mouth, and figured with a characteristically different plumage, under the name of Puffinus fuliginosus (Zool. Proc., 1832), is identical with the young of Puffinus cinereus, which is by no means unlikely, and if a bird apparently in the adult plumage, subsequent obtained by the same gentleman, should prove to be the adult of this species, we shall have, with the addition of a specimen obtained by Mr. Selby, three examples of British-killed specimens of this genus. Mr. Gould figures it forwardly by Mr. Strickland, and which he has figured, that these two birds, although agreeing in their admeasurements—their each other, differ slightly from a specimen of Puffinus cinereus sent to Mr. Gould by M. Temminck as an undoubted example of that species, Strickland’s specimens being less in all their admeasurements; and Mr. Gould adds, that if he could have discovered any difference in the markings of their plumage, he should have had no hesitation in regarding them as distinct: as it is, Mr. Gould figures Mr. Strickland’s specimens, a young one and an adult, as Puffinus cinereus, with a? M. Temminck refers to Mr. Gould’s figure of the adult for Puffinus cinereus, without any mark of doubt.

Puffinus cinereus, according to Mr. Darwin, is common to Cape Horn and the coast of Peru, as well as Europe, and generally frequents the inland sounds. 'I do not think,' adds Mr. Darwin, 'I ever saw so many birds of any one sort together, as I once saw of these behind the island of Chiloé; hundreds of thousands flew in an irregular line for several hours in one direction. When part of the flock settled on the water the surface was blackened, and a noise succeeded from them, as of human beings talking in the distance. At this time the water was in parts coloured by clouds of small crustacea. At Port Famine, every morning and evening, a long band of these birds continued to fly with extreme rapidity up and down the central parts of the channel. I opened the stomach of one (which I shot with some difficulty, for they were very wary,) and it contained a small fish and seven good sized prawn-like crabs. (Journal and Remarks.)

Mr. Gould describes a species, Puffinus Affinis, from New South Wales. (Zool. Proc., 1837.) It is closely allied to P. obscurus, but somewhat smaller.

The Petrels generally have the wings well developed and fly rapidly, skimming over the waves, whence they pick up small fishes, crustaceans, mollusks, and in short any marine animals which they can master. While thus employed they approach nearly in their habits to the true Petrels, spurning as it were the water with their feet (which are placed far backwards) as they fly, and using them as a support while they snatch up their prey. They squat the only matter from their stomachs, when surprised by an intruder, in self-defence.

Puffinus Anglicorum

We now arrive at the true Petrels, which have been divided into the genera Daption, Thalassodroma, + Wetzella, and Procellaria. Our limits will not permit a lengthened discussion on the generic distinction of each of these sub-divisions, some of which do not appear to us to deserve more than subgeneric separation. We shall therefore proceed to give the generic character of Thalassodroma, and illustrate the group by the genus Puffinus, which will permit, by one of each of the genera above alluded to.
**PET**

**Genera Character of Thalassidroma.**—Bill shorter than the head, much compressed in front of the nasal shelf, with the tip of the upper mandible suddenly curving and hooking downwards, 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. **Pedir** of three toes united by a membrane; hind toe represented by a small straight dependent 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 springing the billows as they slide 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 the 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 pelagicus**) under the stern during the night. (Wanderings in New South Wales, vol. 1.)

**Daption.**

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

**Daption Caepensis.**

**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 nostrils 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 the latter believed to be now, with an elaborate de-

**Thalassidroma.** (Vigors.)

This is the genus **Hydrobates** of Boie. Mr. Salby 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 nightfall in search of food, consisting of marine crustacea, small fish, squids, and other animal matter which they find floating on the surface of the ocean. Their flight equals in swiftness that of the Swallow tribe, which they resemble in size, colour, and general appearance. All the known species are of a dark hue, more or less relieved by white, and equally distributed in both hemispheres, and in a variety of climate. They breed in the crevices of rocks, caverns, &c., and, like the **Pulmar** and **Shearwaters**, lay but one egg, which is white, and comparatively large. (Illustrations of British Ornithology, vol. ii.)

**Examples.**—**Thalassidroma pelagicus**, and **Thalassidroma Wilsoni**.

**Description of Thalassidroma pelagicus.**—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; second and third by four lines than the 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 tail is ten lines. Total length five inches six lines. (Male and Female.)

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

**Localities.**—Common in North America than in Europe; found on the coasts of England and Scotland; rather common at the Orkneys and Hebrides; more abundant in the island of St. Kilda; wanders rarely on the coasts of the ocean, and very accidentally on the latter of the centre of Europe. (Temminck.) Mr. Salby 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 northwest 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 not much more limited, being in all likelihood confined to the European seas.

The bird above described, which is considered as the smallest of the web-footed birds, is the **Procellaria pelagica** of Linnaeus; **Uccello della Tempesta** of the modern Italians; **Oieau de Tempête**, **Petrel**, and **Petrel Tempête** of the French and Temminck; **Unguiculatus Vogel**, Kleinschmidt; **Strummosgelang**; **Petters Vogel** of the Dutch; **Peter Vogel**; **Zwaalia** of the Netherlands; **Struksi Vogel** of the Swedes; **Soren Peter**, **St. Peders Fugl**, Vatnan-vindir or **Svinden-vindir Fugl**, and **Uvengrsl Fugl** of the Norwegians; **Lam gu Lamer**, of the ancient Britons; **Common Storm Petrel**, **Stormy Petrel**, and Storm-finch of the modern G. 2.
British, who call the species also (provincially) Little Petrel, Mitty, Astalig, Sperny, Sea-swallow, Ailamouth, Witch, and (mariners especially) Mother Carey's Chickens, a title which is not confined to Procellaria pelagicus, but is shared by and more generally applied to the more oceanic species, such as Thalassidroma Wilsoni, &c.

This, or some other species of Thalassidroma, is in all probability the Cypreopsis of Pliney, who describes (Nat. Hist., x. 36) a bird of this kind, occurring 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 are very much resembles 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. Mr. Selby believes that a single egg is the general law, but he refers to Mr. Scarth's paper in the 'Linnean Transactions' (xiii.).

The latter gentleman found a nest in passing over a track of peat-moss near the shore upon an uninhabited island 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 oily substance. Upon taking both the eggs into a cage a swarm of parasites was offered to her, all of which she refused. At the end of four days, Mr. Scarth saw that she occasionally drew the feathers of her breast singly across or rather through her bill, and spent all her time in the cage. Upon her return from the cage she smeared her breast with train oil, and as she greedily 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 her feathers as before. The young bird was in a flourishing condition about 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 nest till fully grown. The young fly, which has been kept in a cage, between two weeks and some 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 found rather the inland is the seat of its birth 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, rendering it unable to contend with the natural 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 bird is so gracefully swift that it is equally well adapted for the few of the feathered race. It is often seen darting from 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 wings spread, but with short beats, the bird is well adapted for the purpose, and is, as it were, an instrument of nature placed to glide across the ocean. During a gale it is truly interesting to witness their indolence and address. Unapproached by the storm that strikes terror into the breast of the mariner, these birds are seen flying over the waters, 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 along 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 aerial mariners playfully 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 they were stationery, though moving at the most rapid rate. A little while they generally cease their audacious 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 the same number of birds to the sounding of 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 Coccus and beard, in all the crustacea, and in the small gelatinous spores of the Gulf-weed (Fucus nodosa), as well as fish, small crustacea, &c. Nuttall informs us that these Petrels breed in great numbers upon our rocky shores of the Bermudas, and along some parts of the coast of East Florida and Cuba. Mr. Audubon informed him that they
also breed in large flocks on the mud and sand islands off Cape Sable in Nova Scotia, burrowing downwards from the surface to the depth of a foot or more. They also commonly employ the holes and cavities of rocks near the sea for this purpose. 'The eggs,' says Nuttall, 'are white, and translucent. After the period of incubation they return to feed their young only during the night, with the oily food which they raise from their stomachs. At these times they are heard through most parts of the night, making a continued clattering sound like frogs. In June and July, or about the time that they breed, they are still seen out at sea for scores of leagues from the land, the swiftness of their flight allowing them daily to make these vast excursions in quest of their ordinary prey; and hence, besides their suspicious appearance in braving storms, as if aided by the dark ruler of the air, they breed, according to the vulgar opinion of sailors, like no other honest bird, for taking no time for the purpose on land, they merely hatch their egg under their wings, as they sit on the water!'

Thalassodroma Wilsoni.

Fulmarus. (Leach.)

Mr. G. R. Gray gives Wegelius, Ray, as the generic name of this form, and Linnaeus quotes Wegelius Cornulium as a synonym of the species which we are about to illustrate. But both Ray and Willughby (to say nothing of other parts of their description) describe the bill of their bird as black, which appears not to be the colour of that of Fulmarus glacialis, either in the young or the adult state. Willughby's figure (t. 68), though not a good one, can hardly be taken for a Fulmar; the nostrils are not represented 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. Salby quotes the figure and description of Willughby as referrible to Larus argentatus of Brunnich.

Example, Fulmarus glacialis.

This species has been considered the type of the restricted genus Procellaria, Linn., by those who confine the sub-species of that genus to the genera Procellaria, Fulmarus, and Thalassodroma. The bill of the Fulmar is stout, thick, with the upper mandible considerably hooked at the tip (where it is also dilated) and subulate. 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, scapulars, 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 ash. (Temminck.)

This is the Procellaria glacialis of Linnaeus and authors; Le Petrel Fulmar and Petrel de l'Ile de Saint Kilda of Buffon; Hanbest of the Norwegian, by whom it appears to be also called Malmose or Malmoe; Greyfowl Croetz of the ancient British; Fulmar and Fulmar Petrel of the modern British, by whom it is also named (provincially) Malmoeck, Malmoe, and Maltlick.

Localities.—The Polar regions principally during summer. It is noted by Major Sabine as occurring within the Arctic Circle (Parry's First Voy., Appendix), 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 by 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 availing 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 adrift. 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 trenchant 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
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 offal 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 hatched about the middle of June, are fed with oily matter digested by the parents. As soon as they are fledged they are eagerly sought by the cormorants, who seize 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 salted for winter provision by the inhabitants of Baffin's and Hudson's Bay. Like the other Petrels, the Fulmar ejects 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.

Pelse maria glacialis.

Psel/elia. (Linn.)
The type of this genus, as restricted by Mr. G. R. Gray, is Psel/elia Aequinoctialis, 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, Psel/elia gigantea, or Nelly (Quebrantahueso, or Break-bones, of the Spaniards), is, he observes, a common bird, both in the inland channels and on the open sea. 'Its habits and manner of flight, continues Mr. Darwin, 'there is a very close resemblance with the Albatross, and as with the latter a bird a person may watch it for hours together without seeing on what it feeds, it is on the water. The Break-bones, or Nelly, is a most rapacious bird, for it was observed by some of the officers at Port St. 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 30 of them were killed in one day, by women of the place, killing young gulls.' The same author adds that the Spaniards were probably aware of the rapacity of this petrel, for 'Quebrantahueso means properly an osprey. These large petrels are called Mother Carey's Geese by the sailors.'

Diomedea. (Linn.) [Albatross] Captain P. P. King, R.N., in his letter to Mr. Broderip above alluded to, says, 'Of the genus Diomedea the species which I regarded as the D. spadicea, chlororhynchos, and fuliginosa of authors, were the most remarkable. Near Tristan d'Acunha the first (D. spadicea) most abounded; between the Cape of Good Hope and the longitude of 30° (D. chlororhynchos) became more numerous; and in the neighbourhood of St. Paul's their place was supplied by D. fuliginosa. 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 are more or less mottled-grey, and the breast, abdomen, vent, and uppypygium 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 be 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, was of a snow-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 Mr. 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., 1834.)

The author of the 'Wanderings' above noticed states that the known species are: D. exulans, D. spadicea, D. chlororhynchos, D. fuliginosa; 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 Baving 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 unharping 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 lost sight of it among the cellular substance of the bone.

Habits, Reproduction, &c.—Captain Carmichael (Li/t. 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 (Dio/medees spadiceas, exulans, chlororhynchos, and fuliginosa) breed on the island; none of them hatch more than one egg at a time. The two former give themselves up to this merely choosing a dry spot of ground, and giving it a slight concavity, to prevent the egg from rolling out of its place.
The egg is white, very large, uncommonly long in proportion to its diameter, and nearly of equal thickness at both ends. The black Albatrosses (D. fuliginosa) were gregarious when Captain Carmichael visited the island (January), and built their nests, which were constructed of mud, raised five or six inches and slightly depressed at top, close to each other. He counted upwards of a hundred in an area of half an acre. The birds stood motionless as statues on their respective bilberry, or party approaching close to them, when they set up the strangest clattering with their beaks, and, on being touched, squirted a deluge of fetid oily fluid from the stomach on the offenders. The nest of D. chlo- rophalaenops was solitary, and the bird selected a sheltered corner, partly shaded by a shrub, from which it drew the water off into the ravines. 'Here,' continues Captain Carmichael, 'it runs up its nest to the height of ten or twelve inches, of a cylindrical form, with a small ditch around the launch a current in conformity with the regard to this bird, that when irritated, the feathers of its cheeks are separated, so as to display a beautiful stripe of naked orange skin running from the corners of the mouth towards the back of the head. All these birds nourish their young by disgorging the contents of their stomach. They are never observed to carry any article of food in their bill; these matters indeed from which they derive the chief part of their sustenance,—the blubber of dead whales, seals, and sea-lions,—would most likely be carried in the bill to any distance. We could not help admiring the utter unconsciousness of danger displayed by them on our approach; they never showed the least disposition to move out of the way; even when kicked, or pulled off their nest, or made not tests, they made no smallest show of resistance; but quietly returned to their post, or stood until we passed on. Their plumage is of the finest order, copious, and without the slightest stain. They find great difficulty in getting on wing, and must run twenty or thirty yards along the ground with expanded wings, before they can get fairly under way. We had the curiosity to take one of them by the point of the wings, and fling it over the rock; yet, though it had several hundred feet of a clear fall, it struck and recovered itself, but dropped down like a stone. On this account, when not engaged with their young, they usually rest upon the edge of the precipice, from which they can launch at once in its immediate air.

Captain Carmichael and his party, in a difficult part of their route, had to kick upwards of a dozen of them to the right and left before they could get on.

Prion (Lacépède.)

This is the genus Pachyptila of Illiger. Generic Character.—Bill strong, stout, white, very much depressed, the upper mandible convex on its sides, terminal part by a comb; the edges serrated internally with cartilaginous lamellae; the lower mandible very much depressed, formed of two arcs soldered at the point, and forming in their interval a guttural pouch; nostrils opening by two distinct orifices and disposed in the form of a cross at the base. At the very small claw in place of a hind-toe. First quill longest.

The type of this genus is the Blue Petrel (Procellaria vit- tata and caerulea, G. B.) discovered by Forster. Many individuals were taken during the voyage of the Cookite, in 50° S. lat. The following is from M. Garnot's description of an individual of this species, which, in the form of its bill at least, appears to be leading the way towards the Lamellirostra- chaceae.
break on the following morning, the ship having frequently run a distance of nearly 100 miles during the night.' (Zool. 
Proc., 1839.)

**FOSSIL ALBATROSS.**

Professor Owen, in the present month (May, 1840), de-
scribed at a meeting of the Geological Society certain ornii-
tholites discovered in the chalk near Maidstone. They consisted of a bhumus of a hundred and two fragments of a tibia.

Their proportions were such that the Professor could not refer them to any other group of birds than the Longipesnes of the Pamelord order of Cuvier's system: and the humerus, equalled in size that of the largest Albatross with which Professor Owen had been able to compare it.

**PETRICA.** (Lithographic, vol. xiv., p. 48.)

PETRICA is one of the general terms by which naturalists in 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 equi-
valent for such expressions as 'formed stones,' 'imbedded fossils,' 'organic 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 Petrificaion, is the probability 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 lapidification has been found to have been perfectly well-
formed on objects of comparatively recent date never im-
bedded in the earth, as the wood of a Roman aqueduct in Westphalia. Calcareous deposits from springs, which invest masses of ashes, and bones with a stony case, are often called petrifications. [Organic Remains.]

**PETRINICULA.** (Merulide, vol. xv., p. 122.)

Lieutenant-Colonel Sykes, in his 'Catalogue of Birds observed in the Dobson' (Deecken), records a species under the name of *Petrocincla Naccardi,* but it is only a name that the term from the Solitary Thrush of Europe (Turdus Cyaneus, Linn.) in its smaller size, slighter form, want of orange eyelids, and white tips to the feathers. *Pet. Pondao* is found in the dense woods of the Ghatas, and its flight is more rapid and colonial. Sykes adds, that it appears to correspond with Var. A. of Dr. Latham's Solitary Thrush, vol. v., p. 47. *Petrocincla Maa* and *Petrocincla cinere-
apha* are recorded by Colonel Sykes in the same cata-
logue. (Zool. Proc., 1832.)

**PETROICA.** [Sylviade.]

PETROLEUM, a viscid variety of bitumen, which is found in Europe and Asia, but chiefly in the South Sea Islands, flowing from beds associated with coal strata. As much as 400,000 hogsheads is said to be collected annually in the Birman empire. It is also abundant in Persia, and it is found, among other places, in the island of Barbadoes. It is sometimes called medicinal, and the materia medica of the London Pharmacopoeia, under the name of *Petroleum Rubidense.*

This substance has a dark reddish-brown colour; it is slightly translucent, and its colour is bituminous. The pet-
roleum 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 is employed as a substitute for 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 oily body has a brown colour, and is very liquid; it is ren-
d拆 more by drying ether than a solution of calcium, and rectifica-
tion. In obtaining this oil in the first instance the petroleum is mixed with water. Petroleum is the name given by Bou-
singault to this oil; its properties are, that it has a pale yellow colour, slight taste, and a bituminous smell. Its specific gravity is about 0'091. Even when cooled down to about 10° Fahrenheit, it retains its fluidity. It stains paper like the volatile oils, boils at 358°, burns with a good deal of flame, and is miscible with much spirits of alcohol. It yielded by analysis:

<table>
<thead>
<tr>
<th>Substance</th>
<th>Specific Gravity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrogen</td>
<td>12'21</td>
</tr>
<tr>
<td>Carbon</td>
<td>87'04</td>
</tr>
</tbody>
</table>

Dr. Thomson considers it to be constituted of
16 equivalents of hydrogen = 16
20 equivalents of carbon = 120
9'95

Equivalent 136 100

**Asphaltene** is the solid portion of petroleum. Bou-
singault obtained it by treating petroleum with alcohol, which dissolves the greater part of the petroleum and leaves the asphaltene unattacked; 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 melts with a conchoidal fracture, and is heavier than water. When heated to about 252°, it becomes soft and elastic. It burns, like the resins, without leaving any residue. Dr. Thomson concludes, from the experiments of Bou-
singault, that asphaltene is composed of
15 equivalents of hydrogen = 15
9'81
19 equivalents of carbon = 114
74'51
3 equivalents of oxygen = 24
10'68

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 or 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 car-
burried hydrogen, which we have just described under the name of Petroleum of Bechelbronn, Drs. Christison and Reichenbach produced a solid carbur-
ized hydrogen from the petroleum of Rangoon; the former called it petroleum, and the latter *paraffin.* [Hydro-
carbons, Carbonates of.]

**PETROMYZON,** according to Linneaus, a genus of fishes, but now usually regarded as a family, called Petro-
ymyzidae. These fishes constitute the section Cyclostomi of the *Regne Animal,* and are distinguished by their im-
perfectly developed skeleton, their want of pectoral and ventral fins, combined with an eel-like form of body. The mouth is circular, consisting of a cartilaginous ring which is fixed by the ring being fixed by the skeleton together of the palatine and mandibular bones. The branchial, instead of being pectinated, as in most other fishes, are paroos-shaped; they are more or less fixed, and open externally by several apertures.

From this latter point of view, the state of their skeleton (which consists chiefly of a ribless series of cartilaginous rings), and some other peculiarities in their structure, these fishes may be regarded as the lowest of the vertebrate animals. The genus Petromyzon, as now restricted, contains the fishes commonly known as Lampreys. These eel-like fishes are of a cylindrical form, compressed towards the tail, and destitute of scales: they have seven branchial openings on each side, and a small opening connected with these on the upper surface of the head, situated nearly between the eyes: the mouth, or maxillary ring, is armed with strong teeth, and on the inner disk there are smaller rasp-like tubercles: there are moreover two longitudinal series of small teeth on the tongue, which is so formed that, by its movement in the mouth, it acts as a piston, and enables the animal to attach itself by suction to any foreign body.

The Lamprey (Petromyzon marinus, Linnaeus,) is usually about two feet in length; it is of a yellowish-colour marked with brown; its two dorsal fins are distinctly separated, the second one joins with the tail fin, as well as a small strip which represents the anal fin.

'The Lampreys love fresh waters and Rivers,' says Mr. Yorell, 'have no swimming bladder; and being also without pectoral fins, are usually seen near the bottom. To save themselves from the constant muscular exertion which is necessary for their movements, they are attached along with the current of the water, they attach themselves by the mouth to stones or rocks, and were in consequence called
Petromyzon, or Stone-sucker; while the circular form of the mouth induced the name Cyclostomes, from the two small pointed teeth, which was bestowed upon them by Dr. Diderot.

The lamprey is highly esteemed for the table, and is consequently much sought after in the various rivers in which it is to be found. It is a lip only prepared for suet. Dr. Johnson, who was 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 rivers in Ireland, 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, affixed to those fish, to form the sucker-like barrows 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 _P. marinum_ remains in pairs, two on each spawning-place; and while they 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, the _Petromyzon fauna-tildus_ and _P. planeri_, are found in England. The first, called the _Lampetra planeri_, is common in the English rivers. Formerly, says the author of the 'History of British Fishes,' 'the lampmepm was considered a fish of considerable importance. It was taken in great quantities in the Thames from Richmond to Teddington Mills, and was sold to the Dutch as bait for the turbots, 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 given; but a comparative scarcity of late years, and consequent increase 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 lamprenises from Richmond to Teddington. They are very tenacious of life, and the Dutch fishermen managed to keep them alive at sea for many weeks.'

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 _Lampetra fluviatilis_, is of the line _P. fluviatilis_, has the two dorsal fins placed close together; it is of a shorter and stouter form; and may moreover be distinguished from the common lampmepm by its lips being furnished with numerous prominent teeth, and a gill-like set fringe.

The fringed-lined lampmepm is a fish to be 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 Petromyzon 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 strong, and arranged in two rows only, so that the jaws of these fishes appear to be lateral, like those of insects or the Nereides, a circumstance which induced Linnaeus to place them in the class Vermes. The mouth is circular, and furnished with eight cirri; in its upper margin is a spine which points towards its interior. 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 lampmepms. A certain Myxine found in the South Seas, according to Cuvier, has in the trunk of its body seven branchial apertures like the lampmepms, and furnished the type of Duméril's subgenus _Heptactremus_. In the subgenus _Gasterobranchus_ (Block) the intervals of the branchial muscles are of having separate openings, communicate with a common opening, and terminate in a distinct hole situated under the heart. _History of British Fishes_, vol. ii. F. C., No. 1190.

---

This section belongs the Myxine, Glutinos Hag, or Borer of English authors, a genus of fishes, _Linnaeus_, and _Gastrobranclus coccus_ of modern authors._

The next genus of this section (_Amnocoetes_, of Duméril) has the same general form as the lampmepms, and the branchial orifices are the same; but the mouth is semicircular, and the two maxillary teeth are short, and not the power of fixing themselves, like the true lampmepms. They have no teeth, but the mouth is furnished with a series of fleshly tubercles.

The fish found in our streams, and known by the names _Pride, Sandpride, and Mud Lampmepm (_Amnocoetes branchialis_, Cuv), affords an example of this genus. This little fish, which is seldom more than six or seven inches in length, and about the size 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 _Amphioxus_ 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 _Linunus lanceolatus_, but had not been seen since his time till the subject of Mr. Yarrell's description was discovered by Mr. Couch on the shore near Palermo.

The _Amphioxus lanceolatus_, or _Lancelet_, 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 brownish colour. 'The head is pointed,' says Mr. Yarrell, 'without any trace of eye.' The Lampmepm has its mouth on the under edge, in shape an elongated fissure, the sides of which are flexible; from the inner margin extend various slender filaments, regularly disposed, which cross and intersect the fissure, and make 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 quite soft rays; the surface of the body is scaled; around the body is supported internally throughout its length by a flexible cartilaginous column, from which the numerous muscles diverge.

PETRONIUS A'RBITER 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 debauchees, one of whom is the chief narrator, are represented strolling about Campania, and then proceeding by sea to Croton; they meet with numerous adventures with men and women of various ranks, but all as profligate as themselves. Both the description of the bodies and the manners are extremely strong. The scene, and the language to corroborate the testimony of Petronius and other writers 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 Cesar, 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 is not known, and some date it as late as the time of the Antonines. (Ignarra, _De Palstra 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, 'arbitere elegantium,' which may be translated umpire of fashion and master of the ceremonies. Being afterwards disgraced by Nero through the jealousy of Tigidellus, and charged with having given his friends ointment to put into his veins to be opened in the bath, and allowing himself 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 the emperor. It is not known whether this was a part of this work, or whether it was written by another Petronius, as has been much disputed. The best edition of this work is _Vol. XVIII._ — H.
PETRONIUS, whose name has probably been given to two different minerals, viz. compact quartz and compact felspar. The latter has also been termed fusible petrosilex. [FELSPAR.]

PETROLEUM. [PARSLEY.]

PETROV, VASSILI PETROVICH, was the son of a clergyman, born in 1767. While a student at the Zaiikonospasokai school in that city, he distinguished himself by his aptitude for ancient and modern languages, and also by a natural eloquence, and fluency of ideas and words. Whether his reputation has been based on talent in poetic composition is less certain, for it was not until his 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 solicitations 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, which situation however he was obliged to give up in 1786, on account of ill health, and he retired with a pension to a village in the government of Orlov. Here he divided his time between literary and agricultural pursuits, visiting Moscow every winter on business and for the purpose of availing himself of its libraries.

So diligent were his habits of study, that at the age of sixty he began to learn the modern Greek language. He died December 4-16, 1799, in his 64th year.

A part of his original poems appeared in 3 vols., 1801; besides which there is a translation by him of Virgil's 'Eneid,' 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 thought somewhat trifling. As a critic he should be held in high regard; but 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.

Melkorov calls him the 'philosopher bard,' and says that he 'abounds in transcendent imagery, traced with a pen of fire.'

PETER DE ABANO. [ABANO.]

PETRUS DE ABANO was a physician of Lyons, born in 1525, the son of a physician named Julias, became 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 advanced to the position of prelate, and was made cardinal by Gregory XIII., a.d. 1610; and on the death of Adrian V. he was elected to the pontifical dignity, Sept. 13, 1576. 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. (enc防盗于 the council of Lyon, 1245) which ordered that the cardinals should be strictly shut up in the conclave 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 per suade 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 in others; but he does not seem to have been eminent for piety and holiness of life. He wrote several works on medicine, logic, &c, of which the greater part are still unpublished. A list of their titles may be seen in Osco lon. Medi. Hist., 1842. The most celebrated of his medical works is the 'Thesaurus Pauperum, seu de Medenda Corporis Humani Morbis per 

* The confusion about the popes of the name of John is partly occasioned by the two popes of the name of John XIX. and John XXI. See the list of popes John XIX., and see the list of popes John XXI. (See Genealogia, Chronogr. in 1506.)
Mark Velter however copied it on a scale less than one-half of its original size, and sent his copy to Oliver Cromwell, who forwarded it to Muretus, who published it in 1596. This reduced copy has been inserted in the Topomy of Bertius, in Horn's "Orbis Delineato," and in Boger's "Histoire des Grands et de la Grande Empire Romain." The original map remained at Augsburg, in the library of Pustina's descendants, till 1714, when it was purchased by a bookseller, and sold him by Prince Eugen, who gave it to the imperial library of Vienna. An exact copy of it was made by M. F. van Son, a professor of mathematics, who copied it from the original, with the view of making a map, and dedicated it to the empress Maria Theresa; "Tabula Itineraria Pustiniana, quae in Augusta Bibliotheca Vindobonensi nunc servatur, accurata exspectra à Christiano van Son, cuius iudicii maximi classis, 1753." The map is 21 feet in length, and about one foot wide. The author, whoever he was, did not intend to draw a proper geographical map, with the relative position of countries [MAP; AGATHODAYMON], but merely to collect all the great roads of the empire into a narrow 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 lines of roads are represented as nearly parallel, and most of the great rivers are also made to run in the same direction, from west to east or west to west, which was that of the greatest length of the Roman empire. But the measure of the distances along the lines of great rivers into close approximation to each other, without any regard to the latitude. For the same reason, the Mediterranea, Adriatic, Aegean, and Euxine seas are all compressed in breadth into the shape of long channels, the peninsula of Italy appears to the north of the river Arno, and the 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 marks, and other buildings by circles. Some great 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 Trapani is conspicuously 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 Mannert thinks that he recognizes the Venus, and argues that it belongs to be an interpolation of some copyist of the middle ages, who had before him an older map of the time of the Pagan emperors. (Mannert's Introduction) to his new edition of Pustyria's "Tabula," he states that the original map was drawn while the old religion of the empire was still dominant, seems proved by the heathen temples which are marked upon it, whilst there is no Christian name, with the exception of St. Peter's at Rome, which is probably also an interpolation of some copyist, who, whilst he attended to the desert between the Red Sea and Palestine, as being that in which the children of Israel wandered for forty years," as well as Mount Sinai, where they received the law. Several other particulars on the map seem to fix the date of its original construction to about the time of Alexander Severus, after the Persians had overthrown the Parthian dominion, a.D. 226. The Persian empire is marked in its full extent and written in large capitals, which Parthia is rendered by smaller characters as a province. Palmyra is marked as an important place, with roads leading to it through the desert, which would seem to refer to an epoch previous to its destruction by Aurelian. Edessa in Macer- donia is marked under that name, whilst in Latins it is called Duscietopolis. This and other evidence collected by Mannert indicate at all events an epoch between the reign of Alexander Severus and the end of the third century, making allowance for the interpolations of subsequent copyists.

The Peutingerian Table does not always agree with the Antonine Itinerary; several stations and towns which are in the one are not in the other; the distances between the stations marked on the former sometimes are more than double those given 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 distinct on the one are represented on the other by a single road; but the two together are among the most

---

PETUNTZE, 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 mineral, kaolinite, the latter, petuntze, is the same mineral which has not undergone decomposition, and that on account of its fusibility it is employed in glazing the porcelain.

PETWORTH, [Sussex].

PEUCETIANS, the name given to a tribe of the races of the ancients, who inhabited the country eastward of the south-west coast of France, and the interior part of Spain.

PETRUS, S. See PEU.

PETRUS, S. See PEU.

PETRONA, a golden principle obtained from the peucodana officinalis, or sea sulphur-wort. By treatment with alcohol a solution was obtained which deposited crystals, to which the name of peucodana was given by Schlatter. These crystals are colourless, aereal, transparent, inodorous, and insipid; but when dissolved in alcohol, their taste is very aromatic; they melt at 140° without losing weight; and when the heat is increased, the fluid mass assumes a greenish and afterwards a greyish-white tint; they are insoluble in cold water, are very little dissolved by acids, without dissolving; in cold alcohol they dissolve but sparingly, but when it is heated to 140°, they dissolve in it readily, and the solution is decomposed by water, and also by solution of chloride of tin, sulphate of copper, and acetate of lead, but not by sulphate of iron. It does not appear to possess either acid or alkaline properties. It yielded by analysis:

<table>
<thead>
<tr>
<th>Equivalents of hydrogen</th>
<th>2</th>
<th>5 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 equivalents of carbon</td>
<td>24</td>
<td>70 6</td>
</tr>
<tr>
<td>1 equivalent of oxygen</td>
<td>8</td>
<td>23 6</td>
</tr>
</tbody>
</table>

Equivalents | 32 | 100 0 |

PEUTINGERIAN TABLE, the name given to a map of the roads of the ancient Roman world, which is on parchment, and was found in a library at Speyer in the fifteenth century. It was bequeathed by the proctor of Conrad Corlett, lord of Pustaburg, to the city of Pustaburg at Augsburg, who began to copy it for publication, but died in 1457, before he could effect his purpose.

---

H
valuable antiquem works on geography which have come down to us.

The map extends to the right, or east, as far as the mouths of the Ganges. 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 the eastern part of Britain. It is evi
dent from the faintness of the lines, that one leaf is wanting, and it has perhaps been lost.

PEW. A pew is defined by Dr. Johnson to be 'a seat en
closed in a church. Sittings enclosed in a church would perhaps be considered as common property, 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 church history, who almost invariably use the ex
pression church seat.'

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 men
tioned to seats in a church or particular parts of a seat, which were probably cases of
private rights. '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 parish
ioners, and are to be so managed as to be as readily and
teniently as best to provide for the accommodation of all.'
The right of appointing what persons shall sit in each
case belongs to the ordinary (3 Inst, 202); and the church-
wardens, who are the officers of the church, are to appoint 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, 232.)
A parsonioner 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 cite them in the
ecclesiastical court to show cause why they have not seated
him properly; and if there be persons occupying pews who
are not parishioners, the officers of the church must be
required not to allow them to be seated. (S. J. Nicholl,
2 Add. 426.)

The right by faculty arises where the ordinary or his
predecessor has granted a licence or faculty approving cer-
tain pews to be occupied in particular form; sometimes the
appropriation has been to a person 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 a
certain house in the parish.' The right is to a pew in 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 occu-
pant of a pew in the body of the church ceases to be a
parishioner, his right to the pew, however founded, and
how valid soever during his continuance in the parish,
at once ceases.' (Fuller v. Lane, 2 Add. 427.) The same
document has been sanctioned by the Court of King's Bench.
(Byerley v. Windus, 5 Barn. and Cres., 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 that there might (Loudy v. Hayward, 1 3. and I. 583).
As prescription presumes a faculty, 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 exer-
cise jurisdiction, grouping the cases as suits
on 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 sup-
port a claim to possession, occupation, or enjoyment, or
also repair of the pew by the party, if any has been re-
quired; the onus and benefitum goes together. (Pett-
man v. Bridger, 1 Phill, 392; Rogers v. Brooks, 1 T. R.,
218; Grinwell v. St. Andrews, 5 T. C., 297.) The pre-
scriptions apply to pews in the body of the church.
With respect to seats in the chancel, it is stated in the Report
of the Ecclesiastical Commission, page 45, 'the law has not
been settled with equal certainty, and great inconvenience
may have been experienced from the doubts continued to be
entertained. Some are of opinion that the churchwardens
have no authority over pews in the chancel. Again, it has
been said that the rector, whether spiritual or lay, has in
the church the right to install and depose the occupants of the
seats; plans have also been set up on behalf of the vicar; the extent
of the ordinary's authority to remedy any undue arrangement
with regard to such pews has been questioned.' (Gibson, 216;
Inst, 202; Nichols, 2 Add. 425;cf. Scott v. Wills, 3 Man. and Goo
thew, 5 T. C., 298; Clifford v. Wicks, 1 B. and Ad., 498;
Morgan v. Curtis, 3 Man. and Rayl., 389; Rich v. Bushnell,
4 Hagg, Ecc. Rep., 164.)

With regard to aisles or isles (wings) in church, dif
ferent considerations apply. The whole aisle or certain
seats in it may be claimed as appurtenant to an ancient
manor or dwelling-house, for the use of the occupiers of
which the isle is presumed to have been originally built.
In order to claim this exclusive right it is necessary that
it should have existed immemorially, and that the owners
of the mansion in respect of which it is claimed should
from time to time have borne the expense of repairing
that which they claim as having been set up by their predeces
ors.

The purchasing or renting of pews in churches is con
trary to the general ecclesiastical law. (Walter v. Gunner
and Drury, 1 Hagg, Consist. Rep., 314, and the cases referred
to in the note, p. 315; Hawkins and Coleman v. Com-
paigne, 3 Phill, 16.)

Pew-rents; under the church-building acts, are excep
tions to the general law; and where rents are taken in populous
places, though by the civil law they are sanctions, they are
now considered as rent as such, and excluded from manor.
Pew-rents in private unseated chapels do not fall under
the same principle, such chapels being private pro
perty.

PEWTER, a compound metal extensively employed,
specially in the manufacture of those drinking-vessels
called pewter pots. The finest pewter is said to consist of
12 parts of tin, 1 part of antimony, and a very little copper;
while common pewter consists of about 80 parts of tin and
20 of lead. Pewter was formerly more esteemed than at present, especially in the manufacture of plates and
plates.

PEYER, JEAN CONRAD, was born at Schaffhausen
in 1653. He studied at Basle and at Paris, and
having taken the degree of doctor of medicine at the
college of Montpellier, returned to practise at his native town.
He held there successively the professorships of eloquence, of
logic, and of the physical sciences; but his present reputation is
derived chiefly from his having described the disease which
attacks the body, especially the body of the small intestines,
and for which he is commonly called Peyer's glands. He died in 1712.

Peyrou is a town in France, in the department of
Hérault, on a cross-road from Aix to Perpignan, 39 miles
from Montpellier, the capital of the department. Peyrou
was known to the Romans by the name Pisceanum; and
mentioned by Pliny (Hist Nat., lib. viii., c. 49) as pro ducting
in the neighbourhood wool which resembled hair
rather than wool. In the middle ages it was the capital of a county.

The town is pleasantly situated on the Peyne, a little stream
which falls into the Hérault on its right bank, just below Pézenas.
It has neither large houses, nor an important trade.

PÉZENAS, a town in France, in the department of
Hérault, on a cross-road from Aix to Perpignan, 39 miles
from Montpellier, the capital of the department. Pézenas
was known to the Romans by the name Pisceanum; and
mentioned by Pliny (Hist Nat., lib. viii., c. 49) as produc
ing in the neighbourhood wool which resembled hair
rather than wool. In the middle ages it was the capital of a county.

The town is pleasantly situated on the Peyne, a little stream
which falls into the Hérault on its right bank, just below Pézenas.
It has neither large houses, nor an important trade. The
population of 1851 was 7481 for the town, and 7847 for the whole commune.
The townsmen manufacture blankets and coverlets, services and other woolen stuffs, linens, cotton-yarn, thrown silk, hats, brandy,
wine and hemp, tallow candles and other manufactures and products. There are some dye-houses and tan-yards.

Considerable trade is carried on in wines (of which the neigh
bourhood produces some of excellent quality), wheat, oats,
seeds, red tarter, dyeing herbs, dried fruits, capers, olives,
oil, cotton, wool, and woolen cloths. There is a considera


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 [Montmorency], to whose family the county of Pézenas at one time belonged. There are a French school, a subordinate court of justice, and an Exchequer.

PEZOPONUS. [Pittacidae.]

PFIFFel, GOTTLIEB CONRAD, a German writer of repute, was born at Heidelberg, March 11, 1768. His father held the post of Privatdozent at 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 ophthalma, 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 Litzau. Among his pupils and benefactors were many who afterwards distinguished themselves. The changes produced by the French revolution however caused this school, which bore the title of a military one, to close, and afterward the little town was inhabited entirely to those literary occupations which, notwithstanding his blindness, he had before pursuits at intervals. In 1793 he was made president of the Evangelical Consistory at Colmar. He died there May 1st, 1809, just after the publication of the ninth volume of his Poetischen Versuche.

His poems generally display shrewdness and humour, together with a strong vein of moral and religious feeling; but his peculiar power shows itself most in his fables, which have frequently an epigrammatic energy and a piquant turn of expression that renders the moral couched in them additionally striking and effective. Besides these and original dramatic works, he also wrote various moral 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 prolixities, and on the other to expand those parts of the dialogue which furnished hints for his own composition. In this MS. the author was not always successful, since notwithstanding the skill shown in the arrangement of their plan, and the merit of many of their detached scenes, they were deficient in sustained interest and effect.

PHAECARPON, a species of dragonfly or damselfly of the grand-duchy of Baden, is situated in 48° 55' N. lat. and 8° 48' E. long., in the circle of the Middle Rhine, at the entrance of the Black Forest, and on the navigable river Elsa, near its junction with the Negold and Worra. It is surrounded with a wall and moat, and consists of the town and three suburbs. There are four churches and an ancient palace, the church of which contains a handsome monument to the late Duke Charles Frederick. Among the public institutions are a hospital for tuberculous ladies, an hospital for inmianry, an orphan-house, an asylum for the deaf and dumb, &c. The population of the town and suburbs is above 5600. The manufacture of trinkets employs above 100 persons, who are supported by them (in which no gold under 14 carats must be used) 100,000 fr. sterling per annum. The manufactures of watches, superfine cloth and kersey, leather, hardware, and iron wire are flourishing. There are also an iron-foundry, which furnishes annually 5000 cwt. of bar-iron, a tannery, a manufacturer of chemicals, many establishments for dyeing Turkish-red, and extensive bleaching-grounds. Pfahrhein has a very great trade in timber from the neighbouring provinces, which is conveyed by Neckar and the Rhine to Holland. The trade in corn, oil, wine, and cattle is not inconsiderable, for which the situation of the town, on the high road from France to the south, is convenient. The country has long been always distinguished for their bravery and devoted attachment to their princes. Four hundred citizens, commanded by their burgomaster Deimling, formed the body-guard of the brave margrave George Frederick, in the battle of Wimpfen, May 6, 1692, in which, with 38,000 men, he engaged the far superior Imperial army commanded by Tilly. Victory already inclined to his side, when the powder-waggons were blown up, and scattered destruction among his troops. Flight was his only resource. He reached the Margrave, at the earnest entreaty of his followers, resolved not to accept. But even flight could not have saved them, if those 400 brave men had not arrested the advance of the enemy, till the Margrave and the rest of the army were in safety, by setting their lives to the test.

(G. L. Posselt. Gedächtnisrede auf die Gefallenen.)

PHACCHOCERUS. [Suid.]

PHAEDRUS, a Latin writer of the Augustan age, according to the story, was sold like a slave little is known of him; except that it appears that he was born in Thrace, where he was brought to Rome in his youth as a slave, found friends at Rome, applied himself to study, and became a perfect master of the Roman language, and was made free by Augustus, who patronised him. He wrote several books of fables in iambic verse, borrowing, as he says in his prologue, his subjects from Aesop. The fables of Phaedrus have long been a favourite work, for the graceful simplicity of their style, the pointedness of their moral, and the general soundness of their morality. [Fable.] They were first published by Pithou, in 1596, from a MS. supposed to have been written in the tenth century, and which is called the Rosambonous or Nostrae MS., from the name of a lady who possessed it. Another MS., which existed at Rheims, was destroyed by fire in the last century, but it had been previously collated with Pithou's edition, and the variations had been copied, as well as those in another hand, by another MS., called Danielius, and they have been used in the later editions of Phaedrus. The latest edition of Phaedrus has the following title:—Phaedri Augusti Libri Fabulæ Aesopian, prima editio critica cum integra varietate Codd. Polhonii, Remensis, Daniellin, Perottini, et editionis primi, reliqua vero selecta, by J. C. Orell, Bâve, Zürich, 1832, with an 'Introduction.' Perott, bishop of Manfredonia in the fifteenth century, made a collection of Latin fables from Phaedrus, Avienus, and others, for the instruction of his children. This MS. is much more copious than those which are not contained in the usual editions of Phaedrus, in five books. These fables, Fabulae Novæ, were published at Naples, in 1808, as an additional or sixth book of Phaedrus. Perotto's MS. however was found much damaged, and the fables were in a mutilated state. Since that time Angelo Mai has discovered in the Vatican Library another MS. of Perotto, in a state of good preservation, with a preatory letter of the bishop to his friend Mansus Velthus, of Viterbo, and from this MS. the author has been published in a correct form:—Phaedri Fabulae Novæ XXXII, a Codice Vaticano integre ab A. Mai, Supplementum Editionis Orelliani, Zürich, 1832. There seems little doubt now of the distinction between Phaedrus and Phaino: they are perfectly similar in style and manner to the rest. The Fables of Phaedrus were also edited by Bentley, and appended to his edition of Terence.

PHAINONOMOS. [Sarizuk.]

PHANOLOGAMOUS or PHANEROLOGAMOUS plants are those which have visible flowers and seeds. The words are used indifferently in contradistinction to Cryptogamous, which includes those plants which either have no sexes or none which are distinctly visible.

PHAETON (Ornithology). [Tropic Bird.]

PHAHELLOPLEURA, the Rev. Landsdowne Guilding's name for a genus of Chiton, with rather small dorsal plates, and the body zone ornamented with a broad single row of elongated spicate fascicles. Example, Chiton fascicularis. [Chiton, vol. vii, p. 96.]

Mr. Swainson (Malacology, 1840), not having analysed this tribe, has adopted the generic arrangement of Guilding. (Zool. Journ., vol. v., p. 25.) Guilding's genera are:

1. Chiton, which he divides thus:—

Zone distinctly scaly.

** Disk subordinate, transverse-marginal areola distinct. Example, Chiton squamosus, Sowerb., Gen. 2, f. 2; Ch. Caecum, Gray, &c.

** Disk rounded, smooth; areola angular and obsolete. Example, Chiton maritimus, Blainv.

Zone slightly reticulated.
order of the Greeks previously to coming into action is described in 11. xiii. 136, and the succeeding lines.

A like opposition 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 at Isambul and of the palace at Luxor. At the former place an array is 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. Among the figures of the latter is that of Seresotis in full panoply, standing in a highly ornamented car. (Rossellini, 1 Monumenti dell' Egitto, plates 87 to 103.) But, from the nature of the arms and the apparent discipline of the troops, it may be inferred that this was the mode in which the Egyptian armaments 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 Sesostris.

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 is plain, from the other passages in the Scripture, that these further subdivisions were 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 buckler and used both lancers 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 Creesus 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 three; and it is added that Creesus, who had the appearance of three great phalanxes. (Cyropædia, lib. vii.) It is sufficiently evident therefore that the deep order of battle, with a regular arrangement of the men in rank and file, was very similar to that which the Persians had adopted. The Persians, we are told, had their phalanxes divided into sections, prevailed in the earliest times; but it is to the Greek writers that we must go for an account of the particular scales of subdivisions by which the formations of the phalanx on the field of battle were facilitated, and which, joined 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 scales of subdivisions, and some changes in the arms or armour of the men, are hardly what we should expect when it is said that Lycurgus, Lyander, and Epaminondas introduced the phalanx among the Lacedæmonians, the Argives, and the Thibæans. The Macedonian phalanx, the formation of which is attributed 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 in reality was the usual designation of the bodies of heavy-armed infantry in the Grecian 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 λαος, and such body appears to have consisted either of 50 or 100 men. On one occasion, some lochi 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, a division is made and 100 men each formed into separate lochi of 100 men each. (2. lib. iv.) But in the ‘Cyropædia’ (lib. ii.) a division of 100 men is called ρῆμα, and this is stated to have been subdivided into sections of ten and each of that number.

The scale just hinted at was probably peculiar to the Athenian army, for Xenophon describes the Spartan troops as formed into six πῶρα, each commanded by a polemarch; he adds that the mora was divided into four λόγη, eight πτυχαι, and sixteen ιόμοια. (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 Aelian and his abbreviator Arrian, and these authors lived in the time of Hadrian and Antoninus, that is, long after the age in which the phalanx was superseded by the legion. Therefore, it is clear that their de

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. What we find concerning the phalanx in these works is as follows: 16,364 men of the class called στάθμιοι, or heavy

army; but this must be understood to be the whole body of that denomination in an army, and to be composed of three divisions, consisting of half that number of men of the class called φαντάζοντος, or light-armed troops, and another, called also an epistagma, or cavalry (ἱππεῖα), consisting of one-fourth of the number.

The phalanx (παλαικός), who are also mentioned by Aelian, but not as appertaining to the phalanx, united in some measure the firmness of the heavy with the agility of the light armed men. They were first instituted by the Athenians in the face of the troops of the Macedonians, 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 phalanx is expressly said to have been chosen because it is continually divisible by 2, and thus admits of a very simple solution 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 ἐπιστάμενοι, in all, according to Arrian; 40,000 infantry; and there were 7000 cavalry. (Exped. Alex., lib. iii.) At the battle of Raphae, between Antiochus and Ptolemies, there is said to have been a phalanx of 20,000 men in the army of the former. (Polyb. lib. v. c. 5.)

The phalanx, in the sense of Aelian, consisted of 4096 men; one half of that number, or 2048 men, constituted the merarchy (μεραρχία); and one-fourth, or 1024 men, was called a cliarchicy (κληραρχία). One-fourth of the last constituted a syntagma (συντάγμα), or xonagy (ξυναγία), which was a complete square of 16 men each way; and the lowest subdivision was called lochus (λόχος), decuria (δεκεραία), or enomoty (ἐνομοτία), which is, by that writer, considered as a sea-girt and moving to the front, andiele (ἄνθελος) was included in the numbers of the different divisions: each xonagy had its own chief or captain (συναρχάραγγος) at the head, and a lieutenant (ἀναρχός) brought up the rear. The leader of a single file is called Aelian a decuration, perhaps because there were ten of them, consisting of 10 men. A phalanx was made up by a chain. A. Aelian divides the phalanx into sections, each of which has half the strength of the corresponding division in the phalanx; the lowest division is the lochus or file, which consists of 8 men. The epistagma of cavalry is divided in the same proportions as the bodies of infantry, down to the lowest subdivision, which is called δαράς, and is made to consist of 64 men.

The phalangetes were armed with hemicrasses, cuirasses, and greaves; and in the early ages they carried an oval buckler and a pike, the latter about 10 feet long. The change introduced by Philip in the arms of the opisthe consisted in the substitution of a larger shield, and of the phalangetes, a pike from 18 to 20 feet in length. The arms of the pestaloste seem to have differed from those of the opisthe chiefly in the buckler (from whence its designation is derived) being round and only about two feet three inches in diameter, and in 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 provided with a helmet only, and their arms were small javelins, bows, or slings.

A phalanx, in line, was considered as being constituted of two equal parts or wings (εἰκοστά) there was no central division, but the van of the opisthe (οπίσθεν), and of the pestaloste, a pike, from 18 to 20 feet in length. 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 detache, is mentioned by Aelian (Anab., lib. ii. 33) as being thus, for the first time, employed. The march of two phalanges in parallel and with its front parallel to that of the enemy, but it not unfrequently happened that one wing was kept reared. This last method was practised by the army of Leuctra; 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 six men deep. Sometimes also two phalanges advanced in the form of a quadrangle, which might be of use, either according to circumstances; and this disposition was called the πλαίσιον, or the plasmion (πλασμία). When a double phalanx was formed with their fronts in reversed positions, the order was called the δυσβάστατον. The practice seems to have been similar to the last, except that the men faced in opposite directions, from the center towards the wings.

When standing at 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 first men of each file. The left-center file-leader seems to have been immediately before him, in order that the whole body might not give way in the counter-stroke of the enemy.

After the introduction of the Macedonian sarissa 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 from each other in depth, and that each man held in his hands about six feet of the length of the weapon, the point of which belonged to the fifth man would project two feet beyond the file leader. Aelian mentions another, and perhaps the practice which 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 line of troops.

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 the last file-leader, making the same movement, was permitted to pass him till the rear-rank man came into the line which was before the front. The Spartan method was also performed by a countermarch, but the file-leader moved to the rear, followed by the other men, till he arrived at a distance from his first place equal to the depth of his own file; the rear-rank man was the 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 detache, is mentioned by Aelian (Anab., lib. ii. 33) as being thus, for the first time, employed. The march of two phalanges in parallel and
contiguous columns is stated to have been sometimes made by the columns keeping their proper fronts towards the exterior; but sometimes both columns were in like positions, the front of one and the rear of the other being towards the exterior, or in such a manner that the line of march might be taken through a Grecian army consisted in the deep array of its heavy infantry. No body of men less protected by defensive armour could make any impression upon the solid phalanx: and the latter, by the same token of charge, could not fail to overwhelm those troops who were differently formed. But the advantage of the phalanx, while it continued embodied, did not extend beyond the immediate field of battle; and the enemy, if he thought proper to decline a struggle, could, with equal facility, retreat, which might arise from the light-armed troops and cavalry, ravage the country, and by cutting off its supplies compel the army to retreat. The phalanx moreover could only be advantageously employed on ground which was nearly level and free from obstacles; since whatever tended to derange its compact order, necessarily diminished or annulled the effect of its charge. At the battle of Issus, the phalanx of Alexander, while in a state of disorder, as the troops were passing the river, was engaged with the Greeks in the service of Darius; and though it succeeded in repelling the enemy, it sustained considerable loss. (Arrian, Exped. Alex., lib. ii.)

In its marching (lib. xix., extract 3) the efficiency of the phalanx with that of the Roman legion, observes that the latter never opposed the former on a line parallel to its front, but always with one wing thrown back; by which means it broke the line or else turned it. In the case of the phalanx the columns were formed in intervals, all of which the legionaries soldiers could avail themselves to engage the phalangists in flank, and thus render their close array and unwieldy weapons useless.

PHA LABRON [SKEPTRON].

PHA'LA'TRS, a tyrant of Agrigentum in Sicily, of whom very little is known. He was a native of Aty-palaeis in Crete. It is generally agreed that he reigned some sixty years, but accounts differ in regard to the commencement of this period. Suseibus and Suidas place his accession in Ol. 52 (B.C. 570); Jerome, in Ol. 53, 4 (A.D. 565). A still earlier date than the former has also been given, namely, Ol. 31, 2 (A.D. 652); but this is contradicted by the statement of Aristotile (Hist., ii. 26, sec. 5), who speaks of Phalaris as the contemporary of Stesichorus, and by Diodorus Siculus (Excerpta Vaticana, xxvii., p. 23), who mentions Phalaris between Assop and Cresus. Phalaris was described as a man of great wealth by Thucydides, the great-grandfather of Theron and Xenocrates, who flourished in the time of Pindar. (Schol. Pind., Ol. 3, 68.) Phalaris was infamous for his cruelty, and especially for the particular delight he took in Perilus, and his magnificent tuba of his savage tyranny in a bull of bronze, in order that he might enjoy the pleasure of hearing their cries. (Cic. De Republic., iii. 30, sec. 41.) This appears to have been the tradition even in the time of Pericles, who says (Pyth., i. 95):--"Creon'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 festal meetings where the harps resound in the hall and where the youthful choruses sing Perilus, 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 practised upon him the same cruelties and other barbarities on others. (Off., ii. 7, § 26; De Nat. Deorum, i. 33, § 82; Verr., v. 56, § 142; De Fin., iv. 23, sec. 64.) Ovid, Ibis, 429, says that his tongue was first cut out (lingua prius esse rescatata) by the oracles, foretold in propitiation, 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 shown by the people of Agrigentum in the time of Timaeus was a living Phalaris, the statue being a representation of the river Gela; the bull of Phalaris was however afterwards restored to the Agrigentines by Scipio. (Cic. Verr., iv. 33, sec. 73; Diodorus Siculus, p. 614, 90.) On the bull of Phalaris is engraved, "O victima, victoria," etc. (Phalaris, Regiment, 1830, p. 80.)

There were other stories about this tyrant: as that he was an eater of human flesh (Aristot., Ethic. Nicom., vii. 5, § 7); that he used to devour sucking children (Cicero, pro Athenienno, p. 396); and that he even fed upon his own son (see the passages quoted by Bentley, Phal., p. 365).

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 spurious nature of these letters was 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 Caesars, were, however, published as the compositions of Phalaris, by Sir William Temple, who 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 by Schiller (Phalaris Epistola, Gr. et Lat., cum notas Lemmario, præf. ad Comment. et var. Not., 1828).

PHA-LARI'SIS, a small genus of grasses, of which the seed of one of the species is extensively employed as food for birds, and commonly known as Canary seed. The species of the genus are found in warm parts of the world, but Phalaris canariensis, a native of the Canary Islands, 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 East Indies, and in Kent and some other parts of Kent. It is sown in February and reap ed about the end of September, but being a plant of southern climates, and late in ripening, its seed, is an uncertain crop. The produce is from thirty to forty bushels per acre. It sometimes even fails of obtainment.

PHA'LA-ROPE. [S COLOPACIDUS.]

PHA'LERIS. [AUK, vol. iii, p. 100.]

PHA'LE'UM. [Athens.]

PHA'LAI'US, the name given by Aristotle for a genus of Ascidians, which differs from Cynthus in not having the branchial sac plicated; their test or case is gelatinous.

CYNTHIA; BOLTENIA.

PHANEROGAMOUS. [PHANEROGAMOUS.]

PHANEROMUS, an historian of Athens, is referred to by Dionysius of Halicarnassus, as having written upon Attic antiquities. (Hoffmann's Lexicon; Fabricius, Bibl. Græca.) Fragments of Phanerodamus, together with some of Demetrius of Phalerum, and Isier, were edited by Siebelis, Svo. Leipzig, 1812.

PHA'RAMUM. De Montfort's name for a genus of microscopic Foraminifera, generally arranged under the genus Rota (m. d. 0.)

PHARISEES, a sect among the ancient Jews. The name is derived from the Greek φαρίσαιος, and this most probably from the Hebrew פָּרִי, to separate. Suidas says, 'The Pharisees are by interpretation ēwφαρισαι (the separated), because they divided and separated themselves from all others, in exactness of life and in attention to 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 152 B.C.) there were three sects of the Pharisees, the 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 notions 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 received a middle course, maintaining the resurrection to be predestinated, 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 advice 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 exalted above all others by the Jews. It was a strict adherence to these traditions, as well as from, an observance of the precautions 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
PHARMAocolite, native arseniate of lime; it occurs crystallized and fibrous, and there is a variety, called haidingerite, which differs in crystalline form and composition.

The primary form of pharmacoilite is an oblique rhombic prism. Cleave parallel to the oblique diagonal of the terminal planes. Fracture uneven. Hardness 2 to 2½; easily scratched. Colour white. Lustre vitreous. Transparent; translucent; opaque. Specific gravity 2.64 to 2.8.

Pharmacolite occurs in white, yellowish, red, and greenish varieties, small globular and botryoidal masses, which are frequently coloured by arseniate of cobalt.

When heated by the blowpipe, pharmacoilite emits the substances of chlorine, arsenic, and phosphorus, and changes into a white enamel; it dissolves in nitric acid without effervescence.

This mineral is found at Andreasberg in the Harz, and in Thuringia, and at Wittichen near Fürstenberg in Germany, and in some other places.

The pharmacolite of Wittichen was analyzed by Klaproth (1), and that of Andreasberg by John (2); the results were

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>pH</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

100% 96.82

Haidingerite.—Primary form a right rhombic prism. Cleave parallel to the short diagonal of the terminal planes; very distinct. Hardness 2 to 2½. Colour white, and streak the same. Lustre vitreous. Transparent; translucent. Specific gravity 2.84. It accompanies the pharmaocolite of Baden, and was found by Dr. Turner to consist of arseniate of lime 82.68, water 14.35.

Pharmacoilite is a book published by the college of physicians with the sanction of government, containing directions for the preparation of medicines.

PHARMACY, in a comprehensive sense, means the department of natural science which treats of the collection, preparation, and medical and medicinal art of the substances of the art of dispensing them according to the rules or prescriptions of medical practitioners. It is however more commonly used in a limited sense, as a branch of chemical science, and termed pharmaceutical chemistry, the application of the laws of chemistry to those substances which are employed for the cure of diseases, so as to render them more commodious, or their administration more easy, and their action more perfect as a remedy. It should not be understood as merely depending upon some mechanical processes, such as trituration, rasping, or other means of subdivision, or even the simpler chemical actions involved in the process of infusion or decoction, but as requiring a knowledge of vegetable physiology, and an acquaintance with the chemical composition of the substances to be prepared. In many continental nations this department is the subject of very strict legal enactments, and forms an important part of medical policy, especially as regards the dispensing of poisonous drugs; while in Britain any one who chooses may affix the terms chemist and druggist to his name, and may deal in the most useful or dangerous ingredients without that previous education which would fit him to be the appropriate assistant of the physician, whose most judicious plans are often frustrated by the ignorance or carelessness of those to whom the compounding of his prescriptions is intrusted.

MATERIA MEDICA.

PHA/RNACES. [Pontus.]

PHAROS. [Alexandria.]

PHARSA/LIA. [Ces strain; Thessalv.]

P. C. No. 1116.

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 about 15 inches in length, a muscular tube, tapering off from the mouth by a narrow passage, called the pharynx, which is the common passage between the mouth and the nostrils. It is lined by a mucous membrane, and is chiefly composed of layers of strong muscular fibres, called the constrictors of the pharynx, by whose successive contractions food received from the mouth is gradually forced from above downwards. It is divided into three parts:

1. The nasal passages, the mouth, and the air passages, open into the pharynx in front; behind, it is attached to the spinal canal and the auditory tubes; and on each side to the larynx, trachea, and muscles of the neck.

PHASCALOTH/RIUM. [Marsupialia, vol. xiv, p. 466.]

PHASCOGALE. [Marsupialia, vol. xiv, p. 456.]

PHASCOL/ACTOS. [Marsupialia, vol. xiv, p. 461.]


PHASE (phen, 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.

PHASEOLUS, a genus of plants of the tribe Phaseole, in the natural family of Leguminosae. The name is said to be derived from phaseus, a little boat, which the pods assume when ripe; and beans is the English name; 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. multiformis, the Scarlet runner; their ripe pods being much esteemed as legumes, and also for pickling. The ripe seeds are however employed on the Continent, and form the haricot of the French. The genus is however one of which the species are indigenous in tropical parts both of the Old and New World. 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 Phaseolus 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. The pods are herbaceous or subflavous in habit. The leaves are alternate, trifoliate, the leaflets with partial stipules. Racemes axillary. Pedicels usually in pairs, single flowered.

Phaseolus vulgaris (Kidney Bean) is said to be a native of India, but Dr. Johnson states that seeds were brought to him from Cashmere, and he is therefore inclined to consider that it was introduced into Europe from the most northern parts, such as Caulob and Cashmere, 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 trimming of May. In a south east or south west position, 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 ripeped, that the pods are as produced from plants in the store in midwinter, as from those in the open garden in midsummer. It is an article of field culture in France, America, and in most warm countries. Specchey suggests that it might become an object of field culture in this country, and be useful in times of scarcity more especially, as on good land it will flourish and grow luxuriantly even in a dry parching season, in which respect it differs from most other culinary vegetables.

In India several species of Phaseolus are extensively cultivated:

Phaseolus Mungo, or Moog, is one of the dry leguminous grains of India, which are of great value whenever the periodical rains fail and rice cannot be grown, and famine is the order of the day. 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.

Vol. XVIII I.
it is ready to cut, and yields about thirty-fold. The ripe grain is well tasted, nutritious, and is considered wholesome.

P. Mar., 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 produce.

P. radiatus, called by the natives Mash and Orood, 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 an article of diet, 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 coast. It is said to ripen about the end of October or beginning 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 is used for feeding cattle.

PHASES OF THE MOON. [Moon.]

PHASIANELLÆ. [Trocchide.]

PHASIA/NIDE. [Pavonide; Pheasant.]

PHASIS (fe/eng), the principal river in ancient Colchis, and called by the Fræns, the Rion, and by the Romans, Armēnum, according to Strabo (xxv. 498), and among the Moschi, according to Pliny (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 smaller vessels as far as Sarapoon (Sharapoun), on the boundaries of Colchis and Iberia, from which place goods were conveyed by waggons in four days to the river Cyrus. (Strabo, xxv. 498; Plin., Hist. Nat. vi. 4.)

The James in Scotland, now called the Phasis, was sometimes considered as the boundary between Asia and Europe (Herod., iv. 45), and was regarded in the time of Augustus as the northern boundary of the Roman dominions in that part of Asia. (Strabo, vi. 268.) The Phasis received many affluents, 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 Quareis, which flows from Elbou, through the junction of the Rion and Querrilla 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 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 being entered by the largest vessels. The navigation of the Phasis is now entirely in the possession of the Turks, and the near the mouth of the Phasis, the Russians have a station or castle. Kootais on the Rion is the seat of the Russian government of Imeria.

In antient times there were one hundred and twenty bridges over the Phasis; Strabo, (xxv. Hist. Nat. vi. 4), and many towns upon it, of which the most important were Aen, the old capital of the /Aeetes, which is celebrated in the legends of the Argonautic expedition [Argonauta], and Phasis (Phai), situated at its mouth. There are no remains of antiquity on the Phasis. On the banks of the river there were in antient times, as is also the case at the present day, great numbers of pheasants, which are said by Martial (Epigs. xiii. 72) to have been brought into Greece by the Argonauts, and to have been called Phasian from this river.

The Phasis was noted in antient 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 preserve its goodness for ten years; and though this is doubtless an exaggeration, it serves to show how high estimation its waters were held at that time. [Georgia, p. 176.]

(London Geoq. Journ., vol. iii. p. 33, &c.)

PLAVUS, a native of Favara, a town near Camerinum in Italy, whence he called himself Phavorinus, in Greek Phavorinus (Φαβορινος). His family name was Guirano, which he turned into Vivinus (Vivieno). He is also called Cameras, from the town of Camerinum. The present time of his birth is unknown; but it is probable he was born 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 became the ober or superior of the Benedectines. In 1512 he became librarian to Giovanni de Medici, afterwards pope Leo X.; and in 1514 he was made bishop of Nuceria, over which diocese he presided twenty-three years. He died in 1537.

Phavorinus was assisted by twc extraordinary scholars, Charles Antemoreus and Aldus Manutius, edited, in 1496 'Corin Copium et Horii Adonias,' consisting of seventeen grammatical tracts in Greek, selected from thirty-four antient grammarians. In 1517 he published a dedication of his 'Oratio' to the Duke of Urbino, which was much admired. But the work by which he is chiefly known is his Greek Lexicon, which, after the labour of many years, he completed in the lifetime of Leo X. It was published at Rome in 1523, fol., and was dedicated to the Duke of Urbino, and the paper is excellent, but the edition of 1712 is by far the best for all the purposes for which a lexicon is consulted. This very useful lexicon is compiled from the various preceding 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 well as a native Greek. Henry Stephens appears to have been a devoted admirer of the work of Phavorinus in the compilation of his Greek Lexicon, though he nowhere acknowledges his obligation.

(Fabricius, Bibliotheca Graeca ; Roscoe, Life of Leo X.; Quarterly Rev., vol. xxii.)

PHEASANTS. If we owe to America that useful and savage 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 Poultry.

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

Mr. G. R. Gray arranges the Phasianidae as the second family of Raptures, Cracidae being the first; and he divides the Phasianidae into the subfamilies Paroina, Phasianina, Gallina, and Meleagrina. The Paroina and Meleagrina are placed in the order Pavoide, the Phasicina consist of the genera Argus, Phasianus, Scopola, Thaumalea, and Genovesus. The Gallina comprehend the genera Zologranum, Monalus, Lophorhous, Gallus, and Tragopan.

Phasianus. (Linn.)

Generic Character.—Bill of mean length; strong; upper mandible convex, naked at the base, and with the lip beak downwards. Nasal ridge, lateral, covered with a cartilaginous scale; cheeks and region of the eyes destitute of feathers, and covered with verrucose papules. [In the wild state 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 three or four toes united by a broad band. First joint, and the bind toe articulated upon the tarsus, which, in the male birds, is furnished with a horn-like coneshaped sharp spur. (Gould.)

The type of this genus is generally considered to be the Common Pheasant, Phasianus Colchicus, Linn., a bird which, though not originally British, is completely naturalised in our islands, and indeed appears to adapt itself with great facility to most countries where ordinary care is taken to preserve it and the temperature is not too low for its constitution. The species is too well known to need description, but an account of its introduction into Europe generally and into our own 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 fate, we owe this ornament to our preserves and tailors to Jesus and his companions, who brought it from Colchis, in Asia Minor, thus notices its introduction into Europe (lib. xiii, ep. 72): Phasianus loquitur.
Leogoras feeds," says Strepsicrates, in the Clouds (109, 110), Aristotle writes succinctly but clearly of the habits of the pheasant as a well-known bird (Hist. Anim, v. 31; vi. 2), and nor is Athenaeus silent concerning so delicate a dish, which appears to have become more common as luxury waned, and was not only served to the king himself but to many others. Though he kept them and provided them with horns (ραπαχας ἄνθρωπα) 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 antients, contented with the opinion of moderns respecting their taste, and buckwheat and beans as barley, as favourites. Small stacks of the latter grain in the straw are frequently placed about the preserves, and there the pheasants may be seen scratching at their feeding-time; but this modern observation, that the pheasant 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, beans, 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 destitute with accorns, 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 hazel-nut taken out by one of the crop of the field in the garden at Newmarket. 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 were planted. They have since been planted in the garden at Newmarket. Sir J. Gardner has the potatoes used with excellent effect, not only in keeping the birds from wandering, but in increasing their weight and firmness. Carrots loaded 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 &c. away, without being collected together at particular spots, as they too often are to their destruction. They are very general feeders; neither blackberries, sloes, nor any other fruit is left unripe, except the grapes, and the 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 bulbus crownflower (Ranunculus bulbosus, Common Buttercup) in May and June, and a friend informed Mr. Yarrell that they also feed on the Pilowort Crowfoot (Ranunculus ficaria). Mr. Selby further states that the bulbs of the garden tulip is an article of diet which the pheasant omits no opportunity of obtaining; and Mr. Yarrell, however, has no personal acquaintance with it, it is at a distance too near 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. Selby, 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 since,' says Mr. Yarrell, 'my friend Mr. Louis Japon, then of the Claremont, 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, 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 other gallinaceous birds, is subject, the fatal gapes holds a prominent place. The cause of this disease is an intestinal worm which adheres to the internal surface of the intestine, and causes death by suffocation, sometimes arising from infection of the part, and at other times by actual obstruction. This entozoon is Syngamus trachealis (Distoma lineare of Rudolphi, Fasciola Trachaea of Montagu), and a most curious animal it is. The bifurcation of the anterior extremity was taken by early observers for the sign of the heart, and the name Distoma (double-mouthed); but this bifid termination is in reality due to the two sexes. The female is long; and the short male is affixed to her for life by means of an infearing weapon which is not an open, exhibits an otherwise free and distinct animal. In the museum of the Royal College of Surgeons, Nos. 199, 200, 201 (Preparations of Natural History in Spirit), exhibit

The Flamingoes.

Alluded to in Shakspere's 'Much Ado about Nothing.'

THE

PHE

59

PHE

in the old ballad of the 'Battle of Otterbourne.' At the 'Intronization of George Nevell,' archbishop of York, in the reign of our fourth Edward, we find among the gayly provision, 'Feasantes, 200.' In the 'Northumberland Household-Book,' begun in 1512, 'Feasantes' are valued at twelve pence each. In the charges of Sir John Neville, of Chete, at Lammass Assizes, in the twentieth 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 same, Sir John Neville, for, as he writes it, 'the marriage of my son-in-law, Roger Rockley, and my daughter Elizabeth Neville, the 14th of January, in the seventeenth year of the reign of our sovereign lady Elizabeth, is to be held; for, with the licence of the time, it is spelled both ways—mention

Habits, Reproduction, &c.—Hen pheasants in this country begin to lay in April, and deposit from eight or ten to fourteen olive-brown eggs, one or two to be hawked on the ground. Sometimes two or three may be laid in the same nest. The young
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 of parasites, which has been blanched 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 New Disease) have been proposed, but that none of them seem to be effectual, except the one recommended by Montagu, namely, fumigating by tobacco, found to be an infallible specific when administered with due care and in a proper mode of administering this remedial measure, by putting the young pheasants, turkeys, chickens, or partridges affected into a common woollen box, into which the fumes are blown by means of a tobacco-pipe. That this often succeeds is true, but it is infallibility in 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 mode of cure. With reference to this, it has occurred to us that we never hear of any pigeons being affected with the gaps, 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.

Sir John Hunter, in a Catalogue 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 peafowl [Pavo cristatus, vol. xvi. p. 173, pl. xii. by John Hunter (Animal Economy) 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 are now groves of pheasants as well as the common pheasant with tail 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 it to be male, and 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 andovid. As the observations hitherto made have principally been upon birds found wild, little of their history can be known; but from what has been described of the pheasant in the Catalogue 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. The same was observed of some time among the pheasants, and it was with particular attention to them, observed that one of the hens, after having produced several broods, moulted, and that this succeeding feathers were those of a cock, and this animal was never afterwards propagated. 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 whom there were several hens, I preserved 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 above alluded to has been proved (Phil. Trans., 1827) by Mr. Yarrell, whose dissections demonstrate this change and its causes, and whose observation on the hybrid pheasant is not unimportant. He states, that 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 author, in his excellent 'History of British Birds,' now in course of publication, observes that these cock-plumed hens are usually called by sportsmen and gamedkeepers "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 hen pheasants are incapable of producing eggs, from derangement of the generative organs; sometimes an original internal defect, sometimes from subsequent disease, and it is a subject of much curiosity. He affirms that he has seen the Gtittins Royal Society, in July, 1712, has entered fully and particularly into this subject. The species in which he had known the change of plumage to be observed were COLUMBA LIVIA, ANAS UNICORNIS, Otis tarda, Emberiza paradisea and longicauda, Pipra rupicola, and Anas Botachas. Alluding to the eggs which have been sold as Cock's Eggs, he observes, that to him it seems most probable that such specimens have been laid by hens which had either assumed plumage of cocks from their youth up, or upon whom the change had come in their old age. Though such phenomena are usually gallinaceous, they are not confided to that family; for he relates that there are several species of ducks, that the plumage of which is so changed, that the duck is so transformed as to resemble a drake, and that the ducks with such plumage are called "duck drakes," and the duck drakes "drake ducks." He goes on to say that every duck drake ducks is in water, and that such ducks are not infrequent sights in this country. Therefore, we would particularly recommend to the attention of the reader who is studying this branch of physiology, the second, third, and fourth sections, respectively entitled Fabris et Aegritus phenomenon, and on ducks, and drake ducks."

(Commentationes Societatis Regni Scientiarum Gottingensiis Recorrentes, Clasiss Physico, tom. iii.)

That hen pheasants which have begun to put on the livery of a cock are, in a great degree, like hens producing eggs, is a fact for which we are indebted to Sir Philip Grey Eger ton, Bart, well known, for the acuteness of his observations in various departments of natural history. Sir Philip informs us that about four years ago a hen pheasant, brought to 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 all died soon after they were excluded. This is a very curious case, and seems to show that though the capacity of producing eggs still remained, the organic defect was sufficient to prevent the completion of the generation of a female."

"Varieties.—White and Pied; the ring-necked and Bohemian Phasians appear to be considered as varieties by Mr. Yarrell; Temminck and Sir W. Jardine consider the Bohemian race to be a distinct species, and find the reasons 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 Hansford, 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 several. Hen Mr. Eyton, 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 cock to which it belonged consisted of five, being remained in the possession of J. A. Lloyd, Esq., of Leaton Knolls; the other three, with the old Grey Hen, fell victims to a farmer's gun, and were destined to the table. Mr. Eyton further states that he had also seen another specimen killed near Cawen in Merionethshire, then in the collect-
tition of Sir Rowland Hill, Bart. Mr. Thompson of Belfast describes (Magazine of Zoology and Botany) another hybrid shot at Lochnaw, Wigstonshire, 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 Leadbeater, in 1837, exhibited a hybrid between the Pheasant and Black Grouse, shot near Alnwick, at a meeting of the Zoological Society. Thus 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. Moorhouse, and Mr. Yarrell (British Birds) records his obligation to the Rev. W. S. Hore, of Stoke near Devonport, 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. Reid, of Trefartha Hall in Cornwall. To conclude this part of the subject in the words of Mr. Yarrell:—"The last of 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 Fuller, Esq., of Cadleston 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-quarter-bred 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 Phasianidae, Wagler. Chrysolophus, J. E. Gray, Nycthemerus, Sw.), the equally well-known delicately pencilled Silver Pheasant (Phasianus Nycthemerus, Linn.—Genus Gennecus, Wagler. Nycthemerus, Sw., Euplocomus, J. E. Gray), and the noble Reeves's Pheasant (Phasianus versicolor, Vieill.), also of the same genus. Of these forms we have endeavoured to give some representation as far as our means will permit.
observations of Mr. Vigors, which appear to us to be valuable as 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 appeared to be Phasianus leucogaster of Dr. Latham. Mr. Vigors pointed out the difference between this species and Phasianus albo-cristatus, 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, Latham), formed a group among the Pheasants, which appeared intermediate between the typical birds of that family and the Gallinaceae, 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 Houdopières, 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 this highly interesting 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 pheasant, which was sent to, and land 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 chalybean 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

Euplocamus ignitus (male)

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 sparse.

Locality, Sumatra.

This is the Fire-backed Pheasant of Java. ('Atlas' to Staunton's Account of Lord Macauirey'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 carnuncles or wattles. Head surmounted with a fleshy crest or comb. Tail (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 ancestry 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 Pithoteron relates why the cock is called Byzantion aemos (the Persian Bird), and how it reigned over that country before Darius and Megasbuz. ( 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 farmyards 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 Gigantissimus Cock or Peafowl (Gallus giganteus, Temm.) and the Bankints Cock (Gallus BANKITS, Temm.) we are chiefly if not entirely indebted for our common poultry.

The domestic cock and hen are the Dilerotis (Alectryon) and Dilerotis (Alectoris) of the Greeks; Gallus and Gallina of the antient Italians; Gaio and Gallina of the modern Italians; Huse Hahn and Huse Henne of the Germans; and Cog (Gaus, Gaus, Gol, Gog), Galline, and Paule 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 females by the male. In the Hog-decoy, the spurs are developed as the sexual organs are mature; and it is principally 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 weakness of age comes upon him, yields to a younger and more powerful rival; and thus a numerous, healthy, and stout progeny is secured.

Hog the domestic cock and hen were introduced into Greece by the most vigorous male. In the south of Europe it is not known upon what occasion or in what manner the Phoenicians are usually resorted to; but we are ignorant of proof which can bring home the benefaction to them more than others. We find it early on the Greek and upon Roman tombs, and upon vases and boxes, and it figured in the public shows of those nations. It was dedicated to Apollo, to Mercury, to Asclepius, and to Mars. Socrates, in his dying moments, reminded his disciples that he "owed a cock to Asclepius." The Rhodian fowl (Martial, vi. 56, above quoted) and those from the island of Cilicia were celebrated for their superiority in fight and their delicacy for the table. The luxurious Roman had his hens fed, perhaps crammed, with meat in the dark. Thus Martial (xiii. 62, "Gallica Allia"):—

"Pavo et dominus gallinae ferox;
Pavo et leonis: ingeniosa gula est."

Nor was the same gastronomer ignorant of the value of the capon. (Martial, xii. 63.) The bird appears to have been in Britain before the invasion of Julius Cæsar, 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; or perhaps the domestic, undutiful, and dissolute hens and geese were esteemed as a dish of inferior quality. (De Bello Gallico, lib. v.)

The race is now spread all over the civilised world.

M. Lessert says it is not remarkable for the domestic 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 Quaun, for example, and 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 Kulin Cock of Europeans, often stands considerably more than two feet from the crown of the head to the ground. The comb extends backwards in a line with the eyes, 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 ornament the head, neck, and upper part; and some of these spring from 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 drooping hackles cover the rump and base of the tail, which last is very ample and entire of a glossy green, of which colour the wing-coverts; the secondaries and quills are pale reddish-yellow on their outer webs. All the under parts are deep blackish green with high reflections; the deep chestnut of the base of the feathers appears occasionally, and gives a mottled and interrupted appearance to those parts. (Jardine principally.)

Leuit-Col. Sykes, in his memoir on the birds found in the Dukhan (Desert), 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 the male game bird should be black 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 chicks. The cock had not the shrill clear pipe of the domestic bird and his scale of notes appeared to be more limited. A cock in the colonel's possession stood 36 inches to the crown of the head, but they attain a greater height. The length from the tip of the bill to the insertion of the tail, 28 inches. Hen one-third smaller than the male. (Zool. Proc, 1832.)
of the wing and tail-coverts dark greyish, with bright golden orange shafts dilating in the centre and towards the tip into a flat horn-like plate. In some of these feathers the shaft takes an elliptical or oval-like shape; in others it puts on the appearance of a long inverted cone, from the centre of the base of which small denticulated teeth arise. The substance and appearance of these plates have been not in any way compared with the wax-like plates which ornament the wings and tail of the Bohemian Chatterer. [Bombycilla].

The perfect 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 outer tail feathers are tawny purple, with a pale yellow edge; those next in succession are yellowish-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 horn-like 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 Cog saunage of Sonnerat; Cog et Poile Sonnerat of Temminck; Sonnerat's Wild Cock of Latham; Rahm Komrah of the Mahattas; Jungle Cock of the English sportsmen in India.

Col. Sykes, in his valuable catalogue, notes this noble 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 Sonnerat's species is found slen- der, standing high upon the legs, and with the yellow cartilaginous spots on the feathers, even in the female. In the woods 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 Sonnerat'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, whereas it is concluded that the wild hen sits upon a less number of eggs—quere tamen.

In the craw and stomach of many birds Col. Sykes found nothing whatever, excepting the seeds of a stone-like hard- ness called Job's tears (Cicuta 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 for 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 Zoological Society's 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 Dorkings are purely white, 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-knotted and penciled 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-knotted, 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 most upright feathers of his tail; and both cocks and hens without one feather about them. The ordinary bantams have feathered legs and the recurved sickle-like tail-feathers. Colonel Sykes remarks that the supposed species Gallus Maria very frequently occurs accidentally in the Dukhan (Deccan), and that, though unsightly, this fowl is very sweet eating. The periosteum of its bones is black, and the comb, wattles, and skin dull purple. Gallus crispus, according to Colonel Sykes, occurs accidentally in the Deccan, like the mentioned variety. This, generally known as the Friesland or
Crested Cock, has all the feathers frizzled, or curled, as it were, the long way. It occurs also in Sumatra, 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 smaller 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 periosteum and skin of this kind are also dark; but the flesh is very white. These silk-fowls make very good nurses, and are easily crossed with the common poultry. The Rumple or Persian Cock, or ' Runkin,' as it was formerly termed, is tailless. Colonel Sykes states that the domestic fowl (Gallus domesticus) and Phasianus (Gallus cristatus) is so abundant in Decem, 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, excepting only in the want of the cartilaginous spot on the wing-coverts.

For an account of the Hybride, 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 [PAYNID.], vol. xvii.] 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. (Cuv.)

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 front of the throat a subpendent composite carunculated wattle. Tarsi armed with a blunt spur in the male; unarmured 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 in the Raptorian 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 Francolinus.

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 fleshly horns and wattles mingled blue and purple; the upper parts 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 black 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 shaded, and there are neither fleshly horns nor wattles. (Gould.)

Mr. Gould observes, that although this species and T. Hastingsii 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 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 grns and roots, the larvae of ants, and other insects. [PAYNID.]

Tragopan Hastingsii (male).

Tragopan Hastingsii (female).

In conclusion we have to call the reader's attention to the beautiful Phasianus Scutellaris (figured and described by Mr. Gould in his 'Century') as one of the true pheasants; and to Phasianus Pucarstia and Phasianus albo-crystatus, also there figured. Phas. Pucarstia appears to us to lead the way from the true pheasants to the Lophophori; and Ph. albo-crystatus to be an Euplocamus, 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 Phaenost* [PAVONIM, vol. xvii, p. 338, et seq.] has been brought alive to this country by the indefatigable Mr. Hume Cuming, 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 a knowledge of a living specimen of this noble bird having been brought home.

**PHEDON.** The supreme ruler of Argos, lived in the eighth century before the Christian era. The Parian marble (No. 31) representing the national sentiment towards him contains poetry by Iphitos and Lucurgus; but the statement of *Pausanias* (vi, 22, § 2), that he celebrated the eighth Olympic games, places him in B.C. 748, which date is also supported by the testimony of *Epheus* (apud Strab., viii, p. 356), that he was in the tenth generation from *Tythus*. Phedon 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 and enterprising prince; and while Sparta was weakened by war with the Messenians, he greatly extended the dominions of Argos, and appears to have acquired possessions on both coast of the Gulf of *Malea*, and of the island of Cythera, which, as 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 were instituted in his honour. He preserved the Eleusinians of their presidency of the Olympic games, which he presided over in conjunction with the Pisians. (Strabo, vii, 326; *Paus., vii, 22, § 2*.) But his usurpation united the Greeks and the Lacedaemonians against him, and thus led to his overthrow.

Phedon is said to have invented weights and measures, which bore his name (Strabo, vii, 376; *Ptol., Hist. Nat.*, viii, 56; Pelleu, xvi, 183), and is also credited by most ancient 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.


**PHI'E, SAVIGNY'S generic name for the Lämminger (Gypaetus barbarus of *Cuvier*). SAVIGNY's name is a restoration from Aristotelie and the Greek writers on natural history; but the form is known to zoologists under the title attached to it by Ray, viz. Gypaetus. [Vulturidae.]

**PHIEROCRATES** (φιεροκράτης), a writer of the old commentary on Aristotle's works with Porphyries, Pharenichus, and Eupolus. (Suidas, *Plato.*) His play, called the 'Countrymen' (Ἀργών), was represented B.C. 420. (Athen., v. p. 218, d; *Plato, Protag.*, c. 47, p. 337 d.) He was a native of Syracuse (Suidas, *Plato.*), of which city a few fragments remain, which have been published, together with those of Eupolus, by Runkel, Leip., 1829. Pherocrates is only mentioned once by Aristophanes (*Lysistr.*, 158). He invented a particular kind of metre, which has been called from him the Pherocratic.

**PHEROCYDES** (φεροκυδῆς). There were two Greek writers of this name, the philosopher and the historian, who are frequently confounded, as in Lucian, *Macrob.,* c. 25; *Cheri. Strom.,* v. p. 547, a; *Euseb., Chron. ad Olymp.*, 59, 4.

**PHEROCIUS.** The philosopher, was a native of Syros. His father's name was Babis, and he was born, according to *Suidas*, in the 45th Olympiad, that is, about B.C. 600. DioGenes Laertius 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 (2, 19) that he was contemporary with Sertius Tullius. He is said by some writers to have been a pupil of Plato, from the sacred books of the Phenicians or from Egypt, and by others to have been a disciple of Pitacus. (Diog. Laert. i, 115.) He taught Pythagoras (Suidas, *Cic., Tuscul.,* i, 16; *De nat. rer.* i, 59), and appears to have had a considerable acquaintance with natural science. (Diog. Laert. i, 115.) He is said by *Cicero* (*Tusc.,* i, 16) to have taught the immortality of the soul. According to *Suidas*, one of his pupils was *Eurydice, Seven Secrets,* and another *Theolus*, which gave an account of the generation and succession of the gods. Theopompus says (apud Diog. Laert., i, 116) that Pherocius was the first among the Greeks who wrote on the nature of the gods.

There are no particulars of the life of Pherocius worth recording. His writings are in a great measure lost; some writers say that he died in the territory of Magnesia in Asia Minor; some, that he threw himself down from the Cyprian rock above Delphi; and others, that he died in Delos.

**PHEROCYDRIS.** The historian, was contemporary with Herodotus, and flourished between B.C. 480 and 436. *Suidas* mentions two historians of this name, and says that one was born at Athens and the other at Leros; but *Vasalius* (*De Hist. Gr.*, iv, 151) says that they are the same person. It appears probable that Pherocius was born at Leros, and afterwards settled at Athens, whence the mistake of *Suidas* arose. The work of *Pherocius*, which is often quoted by the Scholiasts and by Apollodorus, was a mythology in ten or twelve books; but it also included events subsequent to the mythical 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, 339). Compare *Clinton's Fast. Hist.*, vol. ii, p. 372.

The fragments of Pherocius have been published by Sturt under the title of *Pherocius Fragmenta, e variis scriptoribus antiquis commentationem de Pherecyde utroque, historico et philosopho praeemissi,* &c, *Gera, 1787; 2nd edition, Lip., 1824.*

**PHERUSA.** Dr. Leach's name for a genus of the Amphipoda order of Etrichthysmian Crustacea. [EDINBURGH.]

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

Example, *Pherusa fuscocola.*

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

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

**PHERUSA.** A Lamarckian genus of Zoophyta. [POLYPRIA MEMBRANACRA.]

**PHI'BALU'R A.** M. Vieillot's name for a genus of Ampelidce (Fruit-eaters or Chatterers), placed both by Mr. Swainson and Mr. G. R. Gray in the subfamily of Bombyxidina, the Sciuco-Chatterers of the former zoologist. The genera included by both in the subfamily are the same; Mr. Swainson's genera being *Phibalusura, Bombyxidea* (Bombyxidea), and Prosophia, and those of Mr. Gray *Phibalusura, Bombyxidea, and Teryx, Vieill., the latter being the Prosophia of Swainson.

Generic Character.—Bill remarkably short, but rather strong; culmen arched; *Nostria* concealed; *Gape enormus*; the sides smooth. *Feet pale*; anterior scales transversely (S); posterior, (S) and others of same minute, resculate. Tail lengthened, deeply forked. (Sw.)

Example, *Phalusura 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 the head furnished with a crest, which when not elevated is scarcely seen, and appears a deep glossy black mixed with grey and rufous; but, when elevated, is very conspicuous, all the feathers being bright rufous, tipped more or less with black; uppersides of the head grey, the lower part and ears 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 black, each with a knob of white, these 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 spots on the body, and variously appear on the tail: 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 extis
rior 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 evenly connected together (though slightly) nearly as far as the first joint; outer and inner toes likewise articulated, the hind-toe slender and much compressed. (Sw.)

Observations.—Nostrils not covered by a membrane, open obliquely and ovalily round, with a narrow rim round the margins; first and third quarters, nearly the 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 the British Museum.

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 have been in the earlier part of the second century after Christ. He was a pupil of the well-known sculptor Polyclitus, and is said to have been the first to perfect the idea of the ideal form. His works are said to have been preserved in the temple of Minerva at Athens, and are mentioned by Pausanias and other ancient writers. His statue of Zeus at Olympia is said to have been one of the seven wonders of the world. He was also famous as a painter, and is said to have painted the frieze of the Parthenon.

The art of Phidias was characterized by a perfect harmony of form and color, and a perfect knowledge of the human body. His works are said to have been so exact and so lifelike that they are said to have been taken for human beings. His statue of Zeus at Olympia is said to have been so lifelike that it was said to have been taken for a god. His statue of Athena at the Parthenon is said to have been so lifelike that it was said to have been taken for a goddess. His statue of the Lapith and the Centaur at the temple of Theseus is said to have been so lifelike that it was said to have been taken for a real horse and a real centaur.

The works of Phidias were not only admired for their beauty, but also for their moral and religious significance. He is said to have been an adherent of the Pythagorean school of thought, and to have attempted to blend the beauty of the human form with the ideals of the Greek philosopher. His works are said to have been used as models for later artists, and to have inspired many of the great works of art that have come down to us.

The art of Phidias was not only admired for its beauty, but also for its moral and religious significance. He is said to have been an adherent of the Pythagorean school of thought, and to have attempted to blend the beauty of the human form with the ideals of the Greek philosopher. His works are said to have been used as models for later artists, and to have inspired many of the great works of art that have come down to us.
title of Phaidrutnai. 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 Phaidrutnai, 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 many admired statues, some in marble, but chiefly in bronze, of Venus, Apollo, Mercury, an Amazon, etc., etc. (See Pausanias, paassim; Plin., Hist. Nat., xxxvi.; Lucian, De Imag.) His statues of Minerva were numerous; no less than eight or nine are recorded. One of these, the Minerva Areia of the Plateans, 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 Lyssipus, 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 Oresthians, who should all perish in the battle. The prediction was fulfilled. One hundred Oresthians

Fig. 1.

Fig. 2.

ingly 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, viii. 39. 4.) 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 Cotylion, not far from the site of Phigalia. The subjects represented in them are the battle of the Centaurs and Lapithae, 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 100 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 approximate 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 Lapithae, is represented. The same may be remarked with respect to other parts of this fine sense, 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 an harmonious whole. Throughout there is the stamp of
PHI 70 PHI

careful thought, and evidence of an intimate knowledge of art, combined with a free and bold style. Among the ex-
cellencies of treatment, as it is technically called, the value
and quality of flesh and drapery, in contrast, are finely ex-
hibited 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
difficulty alluded to in the merit of the execution may prob-
able 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-
covered 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 Apollotempel
zusammen, Arcadian,' &c., Rome, 1826; also to Part IV.
'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/CÆARE form a small natural order of
exogenous poyxenias, with an inferior ovary, the
principal genus being that after which the order is named.
[PHILADELPHUS.] 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 Myriaceae, from which they differ in having
separate styles, dotless leaves, and albuminous seeds, and
on the other with Saxifragaceae, from which their 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.

1. a vertical section of a flower deprived of petals; 2. a transverse section
of the ovary; 3. one of the stellate hairs.

PHILADELPHIA, formerly the capital of the state of
Pennsylvania, in the United States of North America, is
situated in the county of Philadelphia, in 39° 35′ N. lat. and
75° 10′ W. long. With the exception of New York, it is the
largest city in the United States. The population in 1810
was 96,664; in 1820, 119,325; in 1830, 167,911; and may
therefore be now (1840) estimated at upwards of 200,000.

Philadelphia is about 120 miles from the Atlantic, fol-

dowing the course of the Delaware, and about 55 miles from
it in a straight line. It lies immediately above the junction
of the Schuykill with the Delaware, and occupies the space,
which between the United States river, and the Schuykill
is about four miles in length; the streets which run
north and south, parallel with the rivers, are called First
Street, Second Street, and so on, except Broad Street and
Schuykill Street. These streets are intersected by others
which run from east to west, and which are al-
most all named after trees, as Chestnut Street, Walnut
Street, &c. The squares thus formed are subdivided by
broader streets still smaller and by alleys. The streets
are paved with stones; the foot-pavements are of brick, de-
fended by curb-stones. Most of the principal streets have
rows of locust and other trees, which afford a delightful
shade in the summer. The houses are generally of brick,
which, as the heat of summer will turn them a dull si-
sal of white marble. The streets, steps, and windows are
kept extremely clean, and the whole city has an air of pecu-
niar neatness. Under the main streets there are sewers,
which empty themselves into the Delaware. The city is
lighted with gas. There are a few squares. Independence
Square has about 270 yards each side. Washington Square
is the largest in the city, and is a fashionable promenade.

Of the public buildings of Philadelphia, the old State House
is one of the most celebrated; it contains the state house,
it is of brick, still of the pristine colour. The Declaration
of Independence was read from the steps in front of the build-
ing, on the 4th of July, 1776. The District Court for the
city and county is held in Philadelphia. The State Capitol
was commenced in 1829 on a large scale. The order is Ione.
It has a front of 122 feet, faced with marble, and consists of
a portico of 62 feet, and two wings of 30 feet each.

The Bank of the United States is a splendid edifice, en-
trances only be conducted by admission at certain hours,
and on payment of a small sum. The palace of the Par-
thenon at Athens. The Pennsylvania Bank and that of
the late Mr. Girard are much smaller, but the fronts of both are
of white marble, and they have a very neat appearance.

The Pennsylvania Hospital was commenced in 1751,
by voluntary subscriptions, and opened to the public in 1752;
from that year till 1832, as many as 29,016 patients
were admitted, of whom 15,293 were paupers; 18,400 were
re-stored to health, and 3188 died in the hospital. The num-
ber of lunatics admitted during the same period of eighty
years was 3718, of whom 1289 were cured, and 530 died in the hospital. It is calculated that about 1400 patients are
admitted annually, of whom three-fourths are paupers, and
a large number are insane. The mode of treatment of
insane patients is one of uniform mildness, and the most
beneficial effects have been found to result from it. The
hospital has a library of 7000 volumes. The buildings
occupy a space of a size square, in the centre of which
a bronze statue of William Penn in the dress he used to
wear, the square-cut coat, long waistcoat, and cocked hat.

The House of Refuge occupies a plot of ground 400 feet
in length by 230 feet in breadth, enclosed by a stone wall
20 feet high. The main building is 92 feet long by 30 feet
deep. It receives all destitute males under 21 and all
females under 19. It is a school for the reformation of
characters, which has been productive of great benefit.
About 250 can be accommodated.

The Deaf and Dumb Asylum is built of granite. It is
964 feet long by 63 feet deep. [DEAF AND DUMB, p. 336.]

The Public Almshouse, with an Infirmary attached to it,
is a large pile of building, capable of containing 1609
patients. The average number of patients is about 1000.

There are several other benevolent institutions, among
which the most important are: the Benevolent Institution
has a front of 386 feet, consisting of a portico of 90 feet and
two wings of 148 feet each; the Widows' Asylum; the Orphan's Institution; the Magdalen Institution; the As-
ylum for the Blind; and the City Orphanage. There
are also a great number of Benefit Societies, for the
support of the members in sickness, who contribute a small
sum weekly or monthly.

There are several public buildings of a hundred places of public worship in
Philadelphia, but none of them are distinguished either
Fair Mount, near the city, on the eastern bank of the Schuylkill. The projects 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 was commenced. It is 1,500 feet long, was then in a sloping direction across the Schuylkill, as to be least exposed to the force of the current. There are eight water-wheels, which can raise nearly seven millions of gallons a day into the reservoir, at the summit of a hill 100 feet above the level of the river and 200 feet at 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 beyond what either time or war is ever likely to diminish. 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 all voluntarily placed by 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 energetic public spirit, is distinguished 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 fund.

The manufactures of Philadelphia are considerable, especially the warping-mills; there are two shot-towers, and there are manufactures of nails, leather, hardware, &c. A great trade is carried on up the Schuylkill and Lehigh rivers, in producing the coal of the coal-mines, 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 is hard, brittle, and 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 until the 2nd of June, 1728; its title was "The Universal Instructor 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. The first newspaper printed in Philadelphia, as early as 1702, 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 has 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 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 elevators, every sentinel, in a part of the dimly-lighted part, the cells on each side of these passages, so 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 employed, but their lives are part of their penalty. 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. Although this is not quite true, it is perhaps very nearly so. For an account 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
The following is a statement of the number and tonnage of vessels, with the value of their cargoes, which arrived at and departed from Philadelphia in the year 1837:

<table>
<thead>
<tr>
<th>COUNTRIES</th>
<th>ARRIVED</th>
<th>VALUE OF CARGOES</th>
<th>DEPARTED</th>
<th>VALUE OF CARGOES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SHIPS</td>
<td>TONS</td>
<td>SHIPS</td>
<td>TONS</td>
</tr>
<tr>
<td>British</td>
<td>53</td>
<td>19,364</td>
<td>£13,026</td>
<td>53</td>
</tr>
<tr>
<td>United Stat.</td>
<td>322</td>
<td>66,749</td>
<td>2,200,650</td>
<td>235</td>
</tr>
<tr>
<td>Danish</td>
<td>8</td>
<td>561</td>
<td>270</td>
<td>706</td>
</tr>
<tr>
<td>Hamburg</td>
<td>3</td>
<td>592</td>
<td>3,923</td>
<td>3</td>
</tr>
<tr>
<td>Bremen</td>
<td>3</td>
<td>789</td>
<td>5,761</td>
<td>1,291</td>
</tr>
<tr>
<td>Dutch</td>
<td>3</td>
<td>583</td>
<td>4,328</td>
<td>1</td>
</tr>
<tr>
<td>Austrian</td>
<td>3</td>
<td>583</td>
<td>6,000</td>
<td>320</td>
</tr>
<tr>
<td>Swedish</td>
<td>2</td>
<td>278</td>
<td>2,064</td>
<td>2</td>
</tr>
<tr>
<td>French</td>
<td>1</td>
<td>287</td>
<td>1,132</td>
<td>1</td>
</tr>
<tr>
<td>Sardinian</td>
<td>2</td>
<td>563</td>
<td>4,180</td>
<td>2</td>
</tr>
<tr>
<td>Norwegian</td>
<td>2</td>
<td>220</td>
<td>1,633</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>400</td>
<td>82,678</td>
<td>2,143,198</td>
<td>332</td>
</tr>
</tbody>
</table>

Of the 53 British vessels above mentioned, 3 were from Liverpool, with cargoes valued at 8604l., consisting of iron, salt, coals, &c.; 2 from Bristol, valued at 14,162l., consisting of railroad-iron, iron for other purposes, glass, copper, &c.; 9 from London, with cargoes valued at 3373l., consisting of salt and provisions; 19 from St. John's, New Brunswick, with cargoes valued at 2664l., consisting of salt, fish, fish-oil, &c., and 20 vessels were from various places 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 1682. On the 5th 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 forerunner to the "Declaration of Independence," which was proclaimed at Philadelphia in April, 1776. Congress continued to sit 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 25th of September, 1777, and occupied it till the 18th of the following June. The city remained uninjured during the war. It was the seat of the federal government till the year 1800, and the capital of Pennsylvania till 1799.

PHILADELPHIA. [LYDIA.]

PHILADELPHUS, a genus of plants of the natural family Mitrophyllaceae, which is also the name of a town now unknown, mentioned by Athenaeus, but was applied to the present genus by Bauhin. Philadelphus is characterised by having a calyx with an obovato-turbinate tube and a 4-5-partite limb. Petals vary in number from 4-5. Stamens, 20-40, free, are shorter than the petals. Styles 4-5 united together, or more or less distinct. Stigmas 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 pedicellar flowers arranged in a corymbose eye, in a panicule-like manner, or sometimes in the axils of their leaves, supported by bracts.

The largest number of species are indigenous in North America, whence they have been introduced into the shrubberies of this country, to which they form a highly ornamental addition. A species has also been discovered in the Himalayas, at elevations of 6000 and 7000 feet, of which there are two varieties, sometimes considered distinct species, P. tomentosum being apparently only a more advanced state of P. triflorus. The best known species however is P. coronarius, commonly called Syringa, which is so easy of culture, 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 Hindu-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 south of Europe.

PHILA'RETUS (Φιλάρετος), 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 he lived; nor is it even certain that he is the author of the work in question, as it is sometimes attributed to Philothes and sometimes to Theophrastus Philotes. It was written (as the author tells us) at least two hundred years before Pliny. An obscure and barbarous translation is inserted in the various editions of the curious old collection of medical works called "Articella." The translation by Albanus Torinus is to be found also in the second volume of the "Medicin Aris Princeps," by H. Stephens, Paris, 1567, fol.

PHILELDON, Cuvier's name for a genus of Meliphagide.

[Melaphagaide, vol. v., 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 jay, and the claws are strong and acute. The same zoologist notes that the crows and other birds of a small size, would almost imagine they represented the rapacious order.

Mr. G. R. Gray quotes as the synonyms of his genus Melitornis (Cerithia, Lath., Melitornis calculating L. and PHILIPSON A.); Melitornis Nowe Hollandiae (Vieill., Ois. d'or, pl. 57), M. Balgongra, Steph, as the type. (List of the Genera of Birds, 1840.)


The other two subfamilies of Meliphagidae, according to Mr. G. R. Gray's arrangement, are the Myzomelinae (subfamily 1) and Manornithinae (subfamily 2).

The Myzomelinae consist of the genera Myzoma, V. and H.; Acanthodornis, Gould; and Glaucipidia, Sw.

The Manornithinae comprehend the genera Plectroanephus, G. R. Gray (Plectroduchus, Gould); Manornitho, Sw.; Protrachis, V. and H.; Echidnura, Sw.; Melitexthrus, Vieill.; and Entomophila, Gould.

Plectroduchus had been already used in ichthyology.

PHILEMON (Φιλέμων), a writer of the new comedy, was born at Sali in Chios, according to Strabo (xv., p. 671), 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, 325. He lived to the age of seventy-seven (Lucian, Macrob., 25), and died in the reign of the second Antigonus, son of Demetrius; he must consequently have been alive subsequent to B.C. 263. He is said to have written comedies of the number of 1200, the title of which is preserved (vol. ii., p. 476, ed. Harles), 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, which is the best collection. As it seems possible that some of these plays may exist; at least there is evidence that some of them were in existence in the seventeenth century. (Journal of Education, vol. i., p. 188.)
Philemon was the great rival of Menander, and was consi-
idered superior to him by many of their contemporaries; but,
posterity, as Quintilian informs us (Inst. Orat., x. 1, p. 222, e. Bipton), regards him as much inferior to him. From the time of the Prataiots and the fragments which remain 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.

Two of his plays have been written comedies. (Athen., vii, p. 291, E.) Suidas says that they were fifty-four
in number

There is extant a grammatical work entitled 'Lexicon Technic', and another one entitled 'Lexicon Grammatical', of poor quality,
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, and each book consists of a gar-
tinous kind of verse, in the form of a dialogue between the master and the city of Constantinople, which he designates by the name Νέων, μέντα. It is composed in praise of Joannes Cantans, son of the famous Emperor, and in it is introduced a personification of his works, manner, Fortitude, Justice, Temperance, Truth, Memory, Pity, Cle-
meney, Sagacity, Rectitude, Continence, and Modesty. The
other poems consist of epigrams and various shorter pieces,
together with one of nearly forty, four hundred verses on the
Elephant, addressed to an emperor named Leo, which (as
no emperor of that name was contemporary with Philes)
probably belongs to some other person. (Miscell. Observ. in
the text. P. 43. Xon., 8vo. 1839. Wernersdorf gives, in his 'Pre-
liminary Dissertation,' a list of several works by Philes which
still remain unmentioned in modern editions of classic writers.
(Fabr., Bibli. Graec. et. Bibl. Gr. et. Bibl. Gr., as the writer has
cannot be assigned to Wernersdorf's 'Dissertation.'

PHILETAS, a grammatician and poet of the island Cos,
flourished in the times of Philip and Alexander the Great,
and was preceptor to Ptolemy Philadelphus. He wrote
epigrams, elegies, and other poems, and died of emaciation
brought on by excessive study. (Suidas, Lexicon.) Frag-
ments of five of his poems are cited by Arcadius, and two other poets were edited by
Bachius, 8vo., Halle, 1829.

PHILIDORE, PHILIDORE, a French dramatic composer of
eminence in his day, but better known outside of his own coun-
tries as a most distinguished and unrivalled chess-player, was
born at Drouex 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
page, or chorister, in the chapel of Louis XV., and studied
under Campra, 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
name the composer, which, however, the grand master
was followed by any acknowledgment of a more solid kind,
for after quitting the chapel on his voice changing, he sub-
mitted for some time by copying music—a drudgery to which
Rousseau was obliged to submit—and in giving a few les-
cons. But all his teachers, however kind, could not
be devoted to 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 1753,
and besides the Congreve's Ode to Harmony, which Handel
him, who approved his characters, 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. He was declared supreme arbiter of 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-
ion to the authorship oftheatre, and in the course of many
years, most of which proved eminently successful, in some
such as that of 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 Dic-

Vol. XVIII. —L

P C, No. 1112.
tiannaire des Musiciens considers him to have been, togeth-
er with Duni and Monsigny, the joint father of the Opéra
Comique, but adds that, though he was a profound har-
morous, he was not happiness in music.

In 1777 Philidor reprinted his treatise on chess, con-
derably augmented. In 1779 he produced at Free-Masons' Hall, in London, the Carmen Secularis of Horace, set to music, choirs, chorus, etc., which it was
mourned he had written in imitation of the ancient music,
though such had never been his intention, and some disap-
pointment was excited in many who expected a revival of
those musical accomplishments. But such was the skill and
credulity of his admirers, that they were enabled to believe.
This was published in 1788, in a splen-
did volume in score, 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 style of the ancient Greek, and the airs and
creation of the comic operas, many of which, 'particularly
Gretly's', would be elegant and pleasing music anywhere.

It was again performed, under the composer's direction,
in 1788, 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
Paisley, near the Albion club, in St. James's-street, where
we believe, persons were admitted to witness his ex-
ceptions, 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 at the
same time; and in two months, played two games, blindfolded,
played two games, blindfolded, simultaneously, against very
expert players, and was victorious.

His health now rapidly declining, he applied for a pass-
port 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.

PHILIP (Philippus, a Greek physician, born in the
island of Cos, was one of the pupils of Herophilus, and (ac-
cording to Galen, Introduc.,) the founder of the sect of the
Empirici. [Empirici; Sempanc.] He lived somewhere about
the year B.C. 250 (Ol. 132, 3), wrote a work on botany
(Athen., Deipn., lib. xx. sec. 38, pp. 681, 682), which is
probably the work quoted by Pliny (Hist. Nat., lib. xx.
cap. 91), and some commentaries on the aphorisms of Hip-
ocrates (Eriotin, Lex. Voc. Hippocr. in 6y9tv), neither of
which works is now extant. With respect to the system
of deduction and rejection, and the use of logics and
pathology as useless studies, would of course, at least in the
opinion of modern physicians, prevent their ever attaining
any higher rank than that of clever experimentalists; but
still it must not be denied that Materia Medica is indebted
to him for the rediscovery of many valuable drugs. A parallel
has been drawn between the ancient Empirici and the modern Homeopathists, by Fred. Ferd.
Brinken, entitled 'Philinus et Hahnemannus, seu Veteris
Seetis Empiricum cum Hodiera Seetd Homoeopathico
Comparatio,' svo., Berol., 1834, pp. 36.

PHILIP, the name of several kings of Macedonia, of
whom two deserve particular notice. [MACEDONIA.]  
PHILIP, a younger son of Amyntas, reigned (A.C. 359)
at the age of twenty-three years to a throne which, since
the death of his father, and during the reigns of his two
ever brothers, Alexander and Perdiccas, had been
staked to its foundation by foreign invasion and civil war.
Fortunately for the independence of his kingdom, the young
monarch was endowed 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 last days of
the republic, while the celebrated Pelopidas and Euphor-
undas were in power, had obtained for him all the advan-
tages of a liberal Grecian education. On his accession to
the throne, his inheritance was overrun by the victorious
Illyrians, who had defeated and slain his brother Perdiccas;
his country was overwhelmed by two consuls of Rome, and
the people of Macedonia were dissipated by accumu-
lated national calamities. But his courage and eloquence
revived the hopes of his subjects; and his military skill
and acumen enabled him to execute with consummate
qualities were successfully exerted in the field, negotiations
and bribes were as artfully employed to induce the support-
ors of the rival claimants to abandon their cause; and
Philip found not only repelled the Macedonian
claimants of his ancestry, but penetrated in turn into their
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
his mother-in-law. He was a great, but whose temper
and conduct made her so little agreeable to her husband,
that he finally divorced her.

From the period of the full establishment of his authority
over his kingdom he continued to make the design, which he
thereupon steadily pursued and ultimately accomplished, of
destroying the power and influence of the Athenian people
on the northern shores of the Aegean Sea. As his projects, both on the present occasion
and subsequent ones of his administration,
and the Athenian
states, to secure the protection of her navy against piracy,
and resumed their relations to her as subject allies. She
had thus nearly recovered the naval supremacy lost by the
fateful termination of the Peloponnesian War: but this brief
satisfaction was cut short by a re-occurrence of the
former habitus of oppression towards her allies; and these
produced (A.C. 356) the Confederate or Social War, by a
league of some of the dependent islands and towns against
her,
which lasted nearly a year, and ended in the loss of her
sovereignty. The ablest of the Athenians, and took advantage of the
triumph of Athens in this contest to reduce or win over in succession
Amphipolis, Pydna, Potidaea, and other towns on the north-
ern coast of the Aegean; but it remained in the Athenian interest. Some conquests in
Thrace also gave the Macedonian prince possession of the
gold-mines of Pangaeus, and near these he built or enlarged
a city, which he peopled with Greeks from the conquered
was to be founded, so as to disgust Philip. Thereunder
personal inspection, the mines were worked to such advant-
age, that they produced him one thousand talents annu-
ally; and the gold 'Philips' which he coined served him in the sequel both to build the
great cities of the Macedonian
states and to hire the mercenary troops which with him
now openly assailed their freedom.

The ambition of Philip indeed soon taught him to extend his
view of the aggrandisement in Greece, in whatever epoch of the plans were originally
which he formed
and realised for the acquisition of a general supremacy over the
Grecian states, the first occasion for interfering in their
domestic politics was afforded to him by the Phocian
or Micranthous, who under the name of Poseidon.

The real cause of the persecution of the Phocians was the hatred
with which that people had inspired the Thebans by refusing
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
public and private revenge, the Thebans rashly excited a
commission which was doomed eventually to bring destruc-
tion upon their own state, as well as to annihilate the
generals of Liberty. Availing themselves of their influence in the Amphictyonic Council, of which they hoped
also to obtain the absolute control, as well as to command
the temple of Delphi and its treasures, by destroying the
Phocian, they accused that people of having cultivated
lands which had been devoted to the Delphic god. The
Phocian were found guilty of the charge, and, threatened
and condemned to pay a fine so enormous, that for its liquidation
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 by a sudden attack, and, 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 footing
in Thessaly by making some of the Thessalian nobles, or the Alcandres, the ancient allies of Macedonia,
against the tyrants of Pherae, who were supported by the Phocians 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 more excited by his continued combinations against her influence on the Thracian coasts. When she attacked him 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 oars; he destroyed, however, his houses and 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 reinforcements to Philip, he was recalled to the side of the Lysimachus, Philip and the Thraceans were defeated, and finally besieged and captured Olynthus (347). After this event, both the Athenians and the Macedonian prince were equally desirous of peace, and in the future years were the 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, applied for protection against general Philip, and Philip was only happy in the choice of a master. From Thessaly, passing the defiles of Thermopylae, which had been left unguarded, he marched rapidly into Proper Greece; and, profiting by the misfortune of party intestine, he soon completely succeeded. The Phocians were compelled to surrender unconditionally; the Amphietyonts assembled, and decreed that their towns should be destroyed and the inhabitants disarmed and heavily assessed; and their privileges at Delphi were entirely and completely transferred to the pious monarch of Macedonia. Thus ended (s.c. 346) the Sacred War, which ruined an innocent people and destroyed the little reverence for religion that had before existed.

The crisis was now approaching in the great struggle between Athens and Philip, which, on the part of the former, was for the independence of Greece, and on that of the latter, for the general supremacy in her national government and councils. 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 insisted, perhaps naturally, to the side of Philip, through conviction, or for the sake of power, with the consequent hopelessness of a successful collision with the power of Macedonia, which they either thought useless to resist, or considered not likely to be injurious to their constitution. At the close of the year 343 B.C., Thucydides states that Philip, for all the evils of intestine commotions which they were weary, there remained no cure but a general diversion, headed by Macedon, of the national energies against Persia. Their leaders who had destined to be the shock and upholders of Greece, 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 successful conflict with Philip, and, being under the guidance of Demosthenes and Philip, 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. 343-334.]

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 obtaining possession of the cities of the Propontis and Thracean Chersonese. But Demosthenes had renewed the Athenians to so much alarm and energy, that when the Macedonian attacked and invested Perinthus and Byzantium, a strong armament was fitted out at Athens, which, under the command of Philip, compelled him to raise the siege of those cities (s.c. 339). This was perhaps 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 soon proved Philip to be a rival for the contest between the desultory impulse which could be given to a sickle and divided democracy, without secrecy, unity, or consistency of purpose, and the concentrated power of a monarch of high talent and energy. Philostratus recounts a dialogue on the subject in the profound mystery until they were ripe for execution by adroit ministers, experienced generals, and well-disciplined armies. In the very next year after his repulse before Amphipolis, Philip and his troops wintered in Epirus, and remained in his own country until his death (s.c. 338), and apparently had no desire to pursue the war with Greece, as is evident from the letter written to Chares (s.c. 338) for ever extinguishing the liberties of ancient Greece.

Nothing was more characteristic of the disposition and policy of Philip than his aversion to the use of money. As soon as the victory was secured, he immediately, with his usual humanity, stopped the slaughter; and when, on revisiting the field next morning, after a night of carnage, he beheld the dead Thebans of the Sacred Band lying in ranks where they had valiantly fought and fallen, he said to have shed tears, and exclaimed, 'Perish they who imagine these to have done or suffered shame!' But this burst of admiration did not prevent him from treating the party that had been hostile to the Theban cause with kindness. When he imposed a Macedonian garrison upon the subjacent city, to the Athenians, on the contrary, he behaved with the greatest clemency, dismissing without ransom those among them who had been made prisoners, and granting their republic peace upon very easy terms, the principal condition being that they should send deputies to a general congress of the Amphietyonts at Corinth. Here the great object of the enterprise of Philip was to appear in its full force. After this, the Persians had set forth the invasion. Persia had continually inflicted upon Greece, it 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 power 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 Philip had completed, he was killed by an assassin. While celebrating the triumphs of his daughter Cleopatra with the king of Epirus, he was stabbed by a young Macedonian of his own body-guard, Pausanius, whose motive for the deed, as it was himself put to the spot, could not be ascertained, but 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, etc. [Philip 336-334.]

Thus fell Philip of Macedon, at 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, independently of his object, and in support of the cause of democracy in the contests of his Athenian opponents. 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 monarchical tyranny. Of all the princes of the ancient world 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-
PHI

76

PHI

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, of sparing the vanquished, and of winning 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 eloquence and moral cultivation than it was the school of consummate political science. That he was as insatiable in 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 constant 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 federation against the barbarism of the East. The vicious intemperance of his private life will not bear any comment; but his vices, like his accomplishments, were those of the Greeks, and he had a statue erected in his own city which proclaimed in its 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 Aeschines and Demosthenes, the compilation of Diodorus 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 Pausanias, the brother 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 not, like the other apostles, been mentioned in the Acts of the Apostles; but a little examination 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 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 hung on a tree. He was thus stated.

The Gnostics attributed a 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 9th, and by the Western on the 1st of May (Isidore of Pelusium; Nicephorus Callistus; Cave, Lives of the Apostles).

PHILIP II. OF THESSALONICA. [Anthony]

PHILIP was the name of five Spanish sovereigns, four of whom were of the house of Austria, and one of the Bourbon family.

PHILIP I., king of Castle, surnamed the Handsome, was the son of Man, and the great-grandson of George, Duke of Burgundy, in right of whom he inherited and transmitted to his posterity the house of the Austrians, the seventeen provinces of the Netherlands. In the year 1496 he married Joanna, or Jane, eldest daughter of Ferdinand the Catholic and Isabella, sovereigns of Aragon and Castile; and in 1506, on the death of Isabella, who bequeathed the kingdom of Castle to her daughter Jane, Philip, as well as his consort, assumed the regal title. He was crowned at Burgos with her; and in consequence of her mental weakness, exercised all the functions of government during the short remainder of his life, which closed in the following year, at the early age of twenty-eight.

His queen had survived him for fifty years, in a state between insanity and fatuity; and her malady is said to have been much aggravated by grief at his death, though he had never loved her. She traversed her kingdom, carrying before her a quantity of ladies with her, who were discovered at times that she might behold it; until she was at last persuaded to permit its removal and interment. She had by Philip, besides daughters, two sons, both in the sequel emperors of Germany, as Charles V., and Ferdinand I., the elder of whom, Charles, on the death of his grandfathers Ferdinand the Catholic, finally re-united the crowns of Castle and Aragon. But such was the attachment of the nation to their insane queen, that throughout her long life she was always recognised as sovereign in conjunction with her son; and their names were mentioned together in every formal act of government.

PHILIP II., king of Spain, the only legitimate son of the emperor Charles V., by Isabella of Portugal, was born in the year 1527, and ascended the Spanish throne on his father's abdication in 1556; having in the preceding year entered on the government of the Netherlands, which Charles had assigned to him. By the second marriage of his father, he included the kingdom of the Two Sicilies, Milan with other Italian provinces, and the empire of the New World; and it was a true and expressive phrase for the extent of his power, that "the power and dominion which his father possessed was more numerous than that of any other power; and his veteran armies were composed of the best troops, led by the ablest generals of the age."
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 us to understand the features of his policy and the events which it produced. He was naturally of a stern and morose temperament; and the austerities of a monastic education, aggravating this constitutional defect, had extinguished in his soul every joyous emotion. Embellished by horror of the sight of blood from his 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 barbarously 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.

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 hypocrisy. The character of the great ruler of Spain was that of a rational despot, who had cultivated with philosophic scrutiny, and whose feelings are anything but favourable to him, yet concludes, with more candour and acuteness (Abulfal der Nederlanden), that he was a better ruler than his father, since Charles V, was a persecutor only from policy, but Philip from conviction. Charles made religion subservient to his views of temporal desig:...
Archduke Albert. His haughty spirit was reduced to submit to this measure, as the only remaining expedient for preventing the total alienation of the Netherlands from his house. England and France also had escaped from his toils; 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. But this age of licence and extravagance, of plunder and persecuting, under a complication of dreadful maladies, which bore with exemplary fortitude and resignation.

She 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 reinspired by his father, was exasperated 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 disorderly 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, 1568, and committed to a prison, in which in a few months he terminated 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 find in an account, related, of the same affair, has been variously discoloured 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 unscrupulous authors have the supererogation 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 life, which elapsed quickly 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 of Spain was succeeded by his son; and his successor by his fourth wife Anne, 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 which 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.

Philip III. was a prince, in everything except the business of his life. He was a dutiful son and a dutiful father. Gentle, humane, and unexceptionably indolent, he surrendered himself and the whole management of his affairs, from the very commencement of his reign, to his queen, Elvira, the lady of his heart, the melancholy Marchesa of Denis, 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 unbounded 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 Uzeda, under whom the kingdom was not better governed; and the aged Lerma was displaced by the pope in his unmerited disgrace with a cardinal's hat, which he had used the foresight to solicit a little before his fall, as a protection from the persecution of his enemies.

The circumstances which distinguished the reign of Philip III. were the recognition of the independence of the revolted provinces in the Low Countries, and the expulsion of the Moors from Spain. Notwithstanding the cabals of the general, Spain and France had to pay their tribute to the heroism of the men of the Netherlands to their daughter Isabella and 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 Portuguese, under the Duke of Sire, the duke of Braganza, had, with the incapacity of the exultation 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 kingdom of Spain acknowledged them for free and independent states. In the same year, under the plea that the remains of the Moors in the population in Spain, withstanding their pretended conversion to Christianity, continued in their hearts to be obstinate infidels, and to hold unreasonable correspondence with their African brethren, who prevailed upon Philip to issue a royal decree, on the advice of the states of the kingdom of Valencia to quit the Spanish dominions; and soon after a decree, extending this sentence of banishment to all the Moors in the peninsula, completed (a.d. 1610) the fatal measure, which Spain had so long been struggling for; and, as a sort of indemnity, depopulated by their removal to the opposite shores of Barbary [MAP].

After these events Spain may be said to have languished, rather than found refreshment, in peace, which was interrupted but slightly, by the commotions of the times in Italy and Germany, during the remainder of the reign of Philip. That prince terminated his existence by a fever in the year 1621, at the age of forty-three years. By his queen, Margaret of Austria, he left three sons: Philip, who succeeded him; and Carlos, who died in 1628; and Fadrique, in whom, at the age of only ten years, he obtained from the pope a cardinal's hat, with a dispensation to hold by proxy the archbishopric of Toledo, and who, in consequence of the sudden and unexpected death of his elder brother, was made successively cardinal, prince of the Holy Roman Empire, by the title of the cardinal-infant. Of his daughters, the eldest, Anne, married Louis XIII. of France; and the second, Maria Anne, after having been contracted to Charles I. of England, when prince of Wales, was finally married to the king of Hungary, and consequently succeeded the imperial throne under the title of Ferdinand III.

Philip IV. was only sixteen years of age when he ascended the throne; and, like his father, after he had become the sovereign of his house, he remained the subject of a favourite. This was the famous count-duke Olivares, by which peculiar title he chose to be styled, a man of self-sufficient confidence and inordinate ambition, who affecting a vassal-like subjection to the court, undertook to prosecuted a more vigorous course of policy, concluded for his sovereign with the emperor a strict family league for the aggrandisement of both branches of the house of Austria. The means proposed for this object were the renewal of the war in the Low Countries at the expiration of the twelve years' truce, and the consolidation of the Spanish power both in these provinces and in Italy; while in Germany the Imperial authority should be secured by the subjugation of the Protestant princes. The latter project was now realised, the religious wars, could offer no resistance to these designs; and England was to be amused with that matrimonial treaty which produced the strange journey of Prince Charles, afterwards Charles II., to Buckingham, to woo the infant Maria Anne at Madrid. These intrigues were among the preludes to the long and sanguinary wars which were only terminated in Germany by the peace of Westphalia, and which continued between Spain and France above ten years later, until the treaty of the Pyrenees. In the Netherlands, during the life of the renowned Spinola, the Spanish arms long maintained an ascendant; but in the maritime war which extended to the New World, the Dutch fleets were everywhere victorious over those of Spain; and the policy of Olivares drew upon his country the temporary assails of England as well as the more lasting hostilities of France. Directed by the genius of Spinola, the energies of that monarch were at last successfully applied to humble the power of the House of Austria; and the ambitious projects of foreign dominion, which Olivares had built up, crumbled one after another to the ground.

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 Charles II. of France. Olivares announced the only event to his master as a subject of congratulation. The duke of Braganza has had the madness to suffer himself to be proclaimed king of Portugal. His imprudence will bring a confiscation of twelve millions into your treasures; the same event will also detach Fadrique from the Spanish crown; but Catalonia, after a desperate struggle of many years, was finally reduced to
obedience. Olivarez, whom Philip IV. was himself at last compelled to recognise as the cause of these multiple disasters, was now a private minister by his nephew Don Luis de Haro, who however was neither attached to him nor disposed to imitate his measures.

In the following year (a.d. 1648) 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 rapid advance of Marlborough under the protectorate 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. 1659), which closed the subjugation of Corsica, was on terms of complete subservience.

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 destined to revive the hope 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 thought of the defeat of the Portuguese cause. 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 energised to a still greater degree after he was engaged in applying to business. 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, grandson 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 raised to the rank of his grandfather (Louis XIV.; and it will suffice in this place to sketch the principal events of his life after his recognition as king of Spain by the treaty of Utrecht (a.d. 1718). He had married, two years before, Maria Louiza, a princess of Savoy, to whom he became so tenderly attached that on her death (a.d. 1714) he abandoned for a time all care of business, and resigned himself to the guidance of the celebrated princess Des Ursins, a French woman of spirit and influence. It was therefore not surprising that the queen accompanied her into Spain from Italy, and retained equal influence after her death on the mind of Philip. He desired to follow her advice in the choice of a second consort, and the princess of Savoy was the one selected for her queen Elizabeth Farnese, daughter of the duke of Parma. But the new queen proved of a very different character from that which Alberoni had artfully ascribed to her; and instead of exhibiting the plant temper and feebleness which the princess Des Ursins had been taught to expect and reckon upon governing, her first act was to cause the astonished favourite to be sent out of the kingdom.

Alberoni succeeded immediately to the influence of the discarded princess; was shortly appointed prime minister; and soon obtained from the pope the dignity of cardinal. This man, in whose mind there was much that was uncommon, and something of grandeur, had conceived the design of restoring Spain to her rank and power among nations. He began by the attempt to recover for her the Italian provinces, which had been lost by the treaty of Utrecht: but this, though only a part of the vast schemes which he had formed, was sufficient to alarm the leading powers of Europe; and Philip, it must be confessed, handled the sword of the Empire, and Holland (a.d. 1718), which Spain was unable to withstand. Philip yielded to the demands of the allies by disgraceful and, ensuing Ableroni, under the prejudice against the Spanish alliance with the, by whose means the domestic administration, agriculture and commerce had already begun to revive in Spain. A few years later, Philip, though not without some talents, was of a weak and melancholy disposition, addicted his son Louis (a.d. 1743), who retired with his queen to a religious seclusion at St. Ildefonso; but on the death of Louis, who, in a few months after his accession, fell a victim to the small-pox, Philip found himself compelled to resume the toils of government.

The period of Philip V. was protracted for twenty-two years after his son's death, was occupied chiefly in obtaining possessions in Italy for his two sons by his magnificent queen Elizabeth Farnese, both of whom she succeeded in establishing in that country, Don Carlos as king of the Two Sicilies, and Philip as king of Neapoli and Sicilia. In other respects the transactions of this long reign present nothing remarkable which does not belong to the general history of Europe rather than to that of Spain; and Philip died in 1746, leaving only 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.
it was with difficulty that any bishop could be procured to solemnise 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 Arjou, who sought to recover Bertrade. The church also took up the cause of the dauphin. Philipp was destined for monstrosities, censures, 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 reject Bertrade, and not sufficiently strength of character 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 brother. But the council was dissolved, and the bishops, in a national council at Autun, excommunicated both Philipp and Bertrade (A.D. 1094). The pope, Urban II, despising his weakness, thought it not necessary to pursue him to extremity, and the sentence was only so far enforced as to deprive him of the liberty of wearing the ensigns of royalty, and to prevent the celebration of public worship in the place where he was. He retained the exercise of such power as he possessed, and was allowed to perform his devotions in his private 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 him in arms Pons de Comminis, Count of Anjou and Count of Flanders, and Louis VI, then only eighteen or twenty years of age, afterwards known as Louis le Gros. The activity and good conduct of the prince gradually raised the royal power from the condition in which it had fallen after the death of his step-mother Bertrade. The court was divided; Louis is 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 made in the church, and the excommunication was taken off (A.D. 1104). Bertrade afterwards succeeded in reconciling herself and Philippe with her former husband, Foulques le Rochin, and the degrading intercourse of the two husbands of this infamous woman is described by Sismondi after Orderic Vitalis.

The remaining years of Philippe were marked by little except the intrigues of Bertrade for the advancement of her children by both marriages. Philipp’s death (1106), in consequence of a duel at Blangy with his first wife’s brother, 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. Philipp, of prematurely advanced age, the result of his intemperance, A.D. 1108, having nearly completed the forty-eighth year of his reign, and was succeeded by Louis VI. His worthless character, combined with the low state of the royal power, rendered him a spectacle 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.

For he better known as PHILIPPE AU-GUSTE (a name 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 Alia, daughter of Thibaut le Grand, count of Champagne, his third wife. He was born A.D. 1126, 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 youth, his father being disabled by age, 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 the palace, and the goods of all the rest found on them. He also published an edict, by which 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
the occasion to attack Guenne, Normandie, Touraine, Anjou, and Poitou. These, except Guenne, he speedily conquered; 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, pronounced him a traitor to the crown. The sentence of the peers was given, except by an auxiliary division of English, which proceeded under Prince Edward (afterwards Edward I.) to Acre; and the wreck of the army, diminished by sickness, was conducted with Philip to France. His father, Philip, his brothers had died at Tunis, and he lost, on his way through Sicily and Italy, his brother-in-law, the king of Navarre, through disease, and his wife, Isabella of Aragon, and her children, by a fall. It was not till May 21st, 1271, that he reached Paris. He was crowned at Reims in the following August, and shortly after, by the death of his uncle Alphonse, acquired the counties of Poitiers and Toulouse, which that prince had possessed.

It was the object of Philip to render the great feudal nobles more completely subject to his suzerainty, and he reduced to subjection the count of Foix, who had refused allegiance to him, and to Normandy (a.d. 1272). He married (a.d. 1274) Marie, daughter of the duke of Brabant, who was crowned as queen the following year. He interfered in the affairs of Navarre, during the minority of his kinswoman Isabella, heiress of Navarre; he married to one of his sons; and in the affairs of Castile, to support the claims of the Infants of La Cerda, his sister's children, and heirs in the direct line to that kingdom, whom he married off to Castile. He married his fourth son to a minor noble, his fifth son to a minor niece. He succeeded in retaining Navarre for several years, but his projects in Castile failed of success.

During the earlier years of his reign Philip was much under the influence of Pierre de la Brosse, who had commanded the army which had saved him at Poitiers, and had risen to the rank of chamberlain. His elevation, and the abuse, real or supposed, of his influence over the king, caused his downfall; he was arrested (a.d. 1278), tried (a.d. 1279), condemned to death, and executed in pursuance of his sentence. The immediate cause of his downfall is supposed to have been his inspiring Philip with a suspicion that his Queen, Marie of Brabant, had poisoned her step-son Louis, Philip's eldest son by his first wife, in order to open a way for her own children to the succession.

In 1283 Philip engaged in war with Pedro, king of Aragon; the crowns of which kingdoms had been contracted by the pope (who had excommunicated Pedro) to Charles of Valois, Philip's second son, to be held in feudal subjection to the holy see. The French king assembled his forces and proceeded to Aragon, and Charles found their advice accepted the pope's offer. The preliminaries and nobles formed on this occasion two separate chambers. In 1285 he invaded Catalonia, took the town of Elna by assault and massacred the inhabitants, compelled Rosas and Figueras to submit, fought an indecisive battle at Hostalric, and took Gerona by capitulation. But the long siege and severe loss which this last-mentioned town had cost him, 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. Philip was himself seized by the disease which had wasted his army, and died, on his return to France, at Perpignan, 4th October, a.d. 1285. He was succeeded by his son, PHILIPPE IV., better known as PHILIPPE LE BEI, son of Philippe le Hardi, by his first wife, Isabella of Aragon, who was born a.d. 1268; and succeeded his father on the throne of France October, a.d. 1285. He reigned peacefully, and acquired, in right of his wife Jeanne, the crown of Navarre. 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 lawyer, who was gradually rising to the chief counsellorship, 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 the idea that he was the representative on earth of Christ, whom 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 his continuation of the property,
In 1590 he despoiled the Jews; and in 1591 he ordered the Italian merchants, who engaged 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 leave the country, with their belongings. Many of them speedily quit the kingdom. Two brothers, Florentines, Riccio and Musciatto Franceschi, are supposed to have prompted Philippe to this deed of violence and injustice, by which they obtained illustrious and enviable reputation for themselves in the monopoly of the French markets. The success of these enterprises encouraged the king to make the lawyers the instruments of his exactions; his policy in fact nearly resembled that pursued at a later period by our own government towards the Jews of the United Provinces. The suppression of the Jewish coinage was one of the most usual. He had in this depreciated coinage the sums he had borrowed in a currency three times more valuable. Whenever he however found his plan began to fall against himself, he used revenues being paid in the depreciated coinage, he found it necessary to correct the abuse, and to issue money equal in value to that of previous reigns. This however caused fresh disturbances; debts contracted in the depreciated money had now to be paid in the new and more valuable coinage; and this hardship led to commotions, which Philippe repressed with atrocious cruelty. He found it necessary however to publish some new edicts, in order to remedy the evil complained of (A.D. 1596). In order to stop this debasement of the currency, which served a counterpoise to the popular discontent, Philippe restored the practice of judicial combat in all heavier accusations against the nobility.

It was in the desire of Philippe to obtain his wealth, that led to the suppression of the great military order of the Templars. They were accused of crimes the most revolting by two worthless members of their own order; and Philippe gave secret orders for the arrest of all who were in France; and these orders were executed in all parts of his dominions at the same time. The trials were carried on before diocesan tribunals; and though the pope (who was a creature of Philippe) at first claimed for himself the investigation of the cases, he soon gave up the point, reserving to himself only the trial of the grand-master and a few other chief men. The judges were eager to convict the accused: confessions were wrung from many by torture; numbers were brought to the stake for denying the confessions thus extorted; others were condemned to various inferior penalties. The persecution became general in Europe, but out of France the Templars were generally acquitted of the charges brought against them. The pope however, at the instance of a council assembled at Vienne, suppressed the order by virtue of his papal authority, and granted their possessions to the Hospitalers (A.D. 1311). But Philippe and his nobles had already made exchanges, and Philippe of France of the Templars were obliged to redeem them with heavy payments. Jacques de Molay, grand-master of the Templars, and the commander of Normandy, were burnt at Paris for retracting their errors and renounced to Etienne de Wignes.

The last years of Philippe's reign were signalized by these infamous 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 empire. (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 offer a crown to the French merchants; 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 the others, 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. 1312).

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 Etat, or commons, were admitted for the first time to take part in the national assemblies subsequently designated les Etats Généraux, or States-General. They were present at a council held (A.D. 1299) on occasion of Philippe's dispute with the
pope Boniface VIII. It was in this reign also that the sittings of the parliament, the supreme judiciary court, into which, by the substitution of the lawyers for the nobles, the ancient Cour de Pairs [PHILIPPE II] had been transformed, became fixed at Paris.

Philippe le Bel, also known as PHILIPPE LE LONG, was the second son of PHILIPPE IV, or 'Le Bel,' who 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 A.D. 1316, and married a second wife, pregnant. On the news of his brother's death, Philippe, who was at Lyons, where the concourse of cardinals were engaged in the election of a pope, hastened to Paris, and assembled 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 as 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 upon this occasion that the chate of lay 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 no precedent for exclusion; but on the previous precedent, or from the analogy of the laws of succession which prevailed in other kingdoms, or in the great states, for her exclusion. The ground urged by the legal supporters of Philippe's claim was, not only the withdrawal of the title of succession to the Salic lands, a peculiar species of alodial 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 the precedent of Louis X. was not, it is true, infallible, for 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, whose natural superiorship to his niece the Salic law sustained in the person of the States-General, being convoked, confirmed the title of Philippe; and the death of his only son induced his brother Charles to assent 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 assembled three times in this reign: first to confirm 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 communes, thought the sum of the power of his clerical and of his feudal 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 himself, and the States-General were carefully precluded from the exercise of any properly legislative functions.

The south of France was during this reign the scene of cruel persecutions, directed by the influence of the pope, John XXII., 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; and their possession by a French army was afterwards exercised against those of them who were taken. 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 also against the Jews; inquisitors were sent to investigate them. A hundred and sixty Jews of both sexes were burnt in one fire at Chinon near Tours; others were banished and their goods confiscated. It was while engaged

in these cruel proceedings that Philippe le Long died, Jan. 3, 1322, at Louvain, near Paris, after a reign of eight 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 de Valois, called PHILIPPE DE VALOIS, succeeded to the throne shortly 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 III. le Hardi, and cousin to LOUIS X. He married Jeanne, daughter of Charles le Bel, and Charles le Bel, who successively vowed 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 who had been in power a long time. His personal splendour and incapacity involved him in difficulties, from which he was relieved only by the policy or generosity of his opponents, 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 confided to Philippe de Valois. In the meantime 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 by the Salic law. If, however, a woman, being disqualified merely by sex, might transact a right to her descendants, just as a lunatic or an idiot might be supposed to do; or whether the disqualification affected the law of succession at all, but simply that the women 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 claimants, to be regarded as a precedent to those whose interests were concerned 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, in the nearest in blood to the king, being, as before mentioned, the minister of Philippe le Long, 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, daughter of the last of the last Kings of Navarre, had not been more than too closely besieged with difficulties at home to think of serious 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 plausibility of his claim, and the still more weighty consideration that he was the last of 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 the burghers 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. 21, 1338), and Philip returned with new supplies against their resistance. 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 counties to the public mind, or to those interests which were concerned 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, in the nearest in blood to the king, being, as before mentioned, the minister of Philippe le Long, 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, daughter of the last of the last Kings of Navarre, had not been more than too closely besieged with difficulties at home to think of serious 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 plausibility of his claim, and the still more weighty consideration that he was the last of 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 the burghers 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. 21, 1338), and Philip returned with new supplies against their resistance. 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 counties to the public mind, or to those interests which were concerned 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, in the nearest in blood to the king, being, as before mentioned, the minister of Philippe le Long, 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, daughter of the last of the last Kings of Navarre, had not been more than too closely besieged with difficulties at home to think of serious 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 plausibility of his claim, and the still more weighty consideration that he was the last of 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.
A crusade against the Moors of Granada was a favourite project of Philip, but the concessions which he demanded of the pope, as the price of his services in this affair, were too exorbitant, and it speedily failed (A.D. 1332). He also sent aid to 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. The death of Paulus and Ermengard, last of the project of a crusade, and visited the pope, Boniface XII., at Avignon (A.D. 1336), but the project never took effect; and he was not employed to obtain by exchange the duchy of Bretagne; but this plan also failed, as the emperor of Constantinople, with Edward I. and Philippe broke off. 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 Arelved of Ghent, and destroyed the Philippe, and he 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 count 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 the war, which was carried on in Bretagne, where Edward and Philippe engaged as auxiliaries [BARTAGNE], and in other parts. In the course of it, Philippe sought to obtain money by deprecating the coinage (A.D. 1341), and curtailing the privileges of the nobility of salt (A.D. 1343). He violently and arbitrarily put to death some Breton and Norman gentlemen (A.D. 1342), and tampered repeatedly with the currency. Some regulations were issued (A.D. 1344) 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 years of his reign were as unfortunate as his measures were unjust. He sustained a great defeat at Crécy (A.D. 1346) [Crecy]; lost Calais, the key of his kingdom on the side of England (A.D. 1347) [Calais]; and was unsuccessful on the side of Guineau and Fouton (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 acquisition of the district of Viennois, ceded to him by the dauphin or lord of that country [DAUPHINE], was a poor counterbalance to these calamities.

The death of Philippe was owing to debility, the result of an unseasonable marriage with the princess Blanche of Navarre, which was procured by the marriage of his father to Andrea de Monfort, eldest son of the last of the ancient kings of Aragon. Philippe married her in 1347, and was determined to make her his successor. 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.

PHILIPPES. [BRETTIS: MACEDONIA]

PHIPIANS, EPITILE TO THE, is one of the epistles written by St. Paul during his first imprisonment at Rome. (PAUL, 5.)

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

The occasion of its composition is supposed to have been the following:—the Philippian, having heard that St. Paul was a prisoner at Rome, sent contributions for his relief by the hand of Epaphroditus, whom Theodoret and others represent as his bishop. St. Paul, being much rejoiced by this occasion of intercourse with his friends, learned how great was their proficiency in all Christian excellences, and sends back Epaphroditus with this epistle.

In addition to the utterance of his joy on these accounts, he has occasion to institute the purpose of for-}

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 example of the most endued of his disciples. Their faith in Christ was a lamp to guide their steps in the darkness. Their faith was a scale for weighing the price of a life at once contemplative and active, and so giving them the power of enjoying and diffusing substantial happiness.

In this view 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 pomp, gives an impelling example for every age. He may be called the father wisdom or goodness they had 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 of expression is forcible and direct.

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 was used in the sense of 'epistles only'; and that 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.

(Thedoreet and Bishop F collapsing On St. Paul's Epistles; Fabrice, Bibl. Grac.) Some fragments of Philippi are collected from the northern coast of Magna, the most southern of the larger Philippine Islands, southward to the northern parts of Gulibo and Celebes, unite the Philippines with the Moluccas, and separate the Celebes Sea from the South Sea to the south-east. A large island which runs from the south-western extremity of Magna to the west of Cabeus Umbang and Labian in Borneo. They are called the Sulu Islands, and belong to the Sulu Islands, and the eastern extreme of the Sulu Archipelago. The Sulu Islands, which are frequented by vessels sailing to the China. Further 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 Minoro, one of the Philippines, and the Cape of Isarundung and Sampangmango in Borneo. This chain, which is called the Palawan Islands, or the Archipelago of Felicia, separates the Minoro Sea from the Chinese Sea, which are connected by Mindoro Strait. The Minoro 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 about 68,000 square miles, according to the estimate of Berghaus, in which the surface of Magna, whose coast are very imperfectly known, is estimated at 36,140 square miles. The smaller islands comprehend, according to the same authority, 6290 square miles; and the whole group is more than 123,000 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 Spanish, who have also some settlements on Mindoro, and by leaving aside the eastern coast of Magna, the remainder of this island being in possession of the sultan of the Magindanao and some native tribes. We shall notice the larger islands separately.

1. Magdarra.—This also island, 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 loong, and which are used in cleaning rice, thought they were asking for the name of Luzon, and therefore reasoned from analogy, and so named 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 Pucot Peninsula to the Bahía de Manil to the south, is nearly 420 miles, but 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 parts. 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 Cama- rines. The eastern, 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 eastern peninsula is the Bahía de Camarines, and the Golfo de Lingayen, both on the west. And on the peninsula of Camarines, the Bahía 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., as far as the Cordillera of Cordigero, is nearly a mountainous region, in which 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 at the Gulf of Lingayen, and the limits of the Bahía de Manila. The 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 settlement of the natives of Malay origin, and the mountains, which rise to a great elevation, are only inhabited by the wandering Haraforas. This mountain-region, which extends from Cabo S. Ildefonso, on the south, to Punta S. Vincente on the north, a distance of nearly 200 miles, with an average breadth of about 10 miles, is divided into two branches, the Montes Caravillos. 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. The Montes Caravillos approach this mountain-region, which is also 200 miles long, and probably above 60 miles in width. The Sierras Madre, and appears to rise even higher than the Montes Caravillos; the western declivity however is not steep, but has a gentle slope from 20 to 30 degrees. This declivity, however, is not a 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 settle- ments are numerous. The Sierras Madre only extends to the northern coast of the island in one place, where a high rocky mass, called also Montes Caravillos, reaches the sea, and which separates the sea from the steep declivity of the Sierras Madre along the northern coast is sandy, and generally sterile; the settlements in this part are consequently small and few in number. The eleva- tion of the mountains has not been determined, but it is observed that they do not attain the snow-line, and probably do not rise above the line of trees.

The Montes Caravillos, or eastern mountain-mass, do not terminate at Cabo S. Ildefonso, but continue south- westward toward the Pucot Peninsula, and the Golfo de Lingayen, to preserve their high and rugged character, though the width is diminished to about 10 miles. But as they proceed farther south-west between the sea and the lake, called Laguna de Bay, they diminish in height as they advance. The general term in Lingayen, 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 Caravillos 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 main- land of Luzon, and very probably terminate at the south-eastern extremity of the isthmus, the projecting promontory called Cabesa Bondoc.

The Montes Caravillos are not united by a mountain-range with the Sierra Madre; but south of 16° N. lat., near the southern extremity of the peninsula of Luzon, they form a union of two mountain-masses; along the south-western base of this mountain-range, the Montes Caravillos, 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 Lingayen (16° N. lat.) on the north, to the Bahía de Manila (14° 45') 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 con- siderable elevation: it is called Mount Ararat, and is remarkable for the great number of water springs which flow 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 nearly joined by 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 Bahía de Manila, and the other towards the south, which enters the Bahía 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 well cultivated tract, which is mostly covered with plantations of sugar, can be brought by water to Manila during the rainy months. The population of this plain probably does not fall short of half a million.

The Plain of Pampanga does not extend on the west to the lake of Laguna de Bay, but is separated from it by another mountain-region, the Montes Zambojas, which extend from the promontory of Bataan, on the west of the Bahía de Mani- la, northward to Cape Bolinao, which constitutes the wes- tern side of the Gulf of Lingayen. This mountain-region is about 100 miles long and 20 miles wide. The highest por- tion of it is towards the south, where its general elevation is estimated to exceed 7000 feet. North of 15° N. lat. how- ever the mountains grow lower, and where they approach Cape Bolinao they are of moderate elevation. Five sum- mits in this mountain-mass rise to a greater elevation, but the height of none of them has been determined. These summits are the most important settlements, agricultural settlements have been formed only in a few places. 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 mountains. The north-western end of the island is sufficiently high to form a mountain, probably that which on our maps is called St. Thomas, and which lies on the western side of the Gulf of Lingyen, in 16° 12' N. lat., made an eruption in 1641.

The Bahía 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 only agitated by wind. It is entered by two channels: one to the north, 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 Pulog and the Ilocos Peninsula, and 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 this channel, and is then entered by the Boca Grande. The tides in this bay are very irregular during the north-east mon- soon, when the low tides rise through the Boca Chica with rather a strong current for 18 hours, whilst the high tides body of the sea is sometimes behind the island. The rise is about three feet at full and change. There is an excellent harbour before the Boca Chica called Puerto de Mariveles.

The shores surrounding the bay are low, except at the entrance, where there are rocky mountains of considerable
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 north of the Mouth of the bay, and continues toward the Punta de San Ignacio. This lake 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 3 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 the level of the bay. The lakes is carried off by five very narrow channels, which soon unite, 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 Manila, and has its outlet between the two towns of which the capital consists. The slightly hilly country that surrounds the lake 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 to a range of hills, which, from its west, 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 far from any of this region of hills on the Laguna de Bano 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 rises 1,000 feet on its north, and is seen from it. At a considerable distance east of the lake is another volcano, called the Banayan de Tayabas.

The country which extends southward from these volcanoes appears to be of great fertility, and is pretty well settled: it is wooded on the south at the Estricho 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 Calamianes. The island of Mindoro is about 110 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 Embocadero 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 Sasal and San Pedro de Bacolod open the land to 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 only in a few places leave a narrow strip of level ground. But the character 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 at a short distance from the mountains, there are ten volcanoes, the names of which, from north-west to south-east, are: Bonatan, Bacacay, Lobo, Colasi, Ysagor, Yriga, Bugi, Marsarga, Albay, or Malon, and Bulusan. The Volcano of Ysagor, which occupies the centre of the isthmus between the Bahia de S. Miguel and the Seno de Legonoy, is distinguished by its size and elevation; that of Albay or Malon is noted for the frequency of its eruptions. No eruptions of other volcanoes are recorded. There is a considerable extent of agricultural land, and the most important of the volcanoes, especially in the country surrounding the Bahia de S. Miguel. This bay is about 25 miles long from north to south, with an average width of 12 miles. On the south side of the bay, about 3 miles from the entrance the country rises into hills. Being enclosed 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 dredged by navigators on account of its current. The area, according to Berghaus, is 4115 square miles. The mountains 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 eastern side is skirted by a range of mountains, which are not very high, and are settled on some points of the coast. In 1818 their number did not exceed 951, and the whole population amounted only to 4690 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 Manguirim, towards the north, and the Ensenada de Pelayan, towards the north, are the most extensive; but the approach is dangerous, owing to reefs.

3. Pocchi, a small district, which forms a sort of isosceles triangle, the base of which is more than 160 miles long, and the other sides more than 80 miles. The area, according to Berghaus, is 4579 square miles, or nearly double that of Devonshire. The island is very 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 Poto, on the north, to the Seno de Luan, 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 292,750; and according to an estimate in 1837, it had increased to 406,000 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, which 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 35,445; and in 1837, of 35,622 individuals.

5. Zebi, or Zebo, extends in length from south to north rather more than 80 miles, but is not more than 29 miles wide on an average. The area, according to Berghaus, is 2193 square miles, or about 150 square miles more than that of Norfolk. We are not acquainted with its natural features. Zebi, or Zebo, is the name given to an island that 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 smaller islands, it amounted to 168,426 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 30 miles. Berghaus determines the area to be 1354 square miles. We have no account of its natural features. Bohol is the name given to an island which contains the so-called towns, and as it contained in 1818 a population of 80,344 individuals, or near 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 since the Seno de Bohe was taken.

7. Leyte, or Leide, extends from south to north about 120 miles, with an average width of 35 miles. According to Berghaus, the area is 4527 square miles. We are not acquainted with its natural features. Leyte is the name given to an island which contains the so-called towns, and as it contained in 1818 a population of 40,822 inhabitants, in 1837, of 92,165 individuals.

8. Cebu, the largest of the Philippines which are 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
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 visited by the Sulu corsairs, though not distinguished by fertility, is far from being sterile. According to the census of 1818, the population of Sama and the small island of Capul amounted to 57,292 individuals, a number which had increased in 1837 to 98,632.

The capital of Sama is Magindanao, which is the largest town and the capital of the Sama, and is situated on the east coast of the island of Mindanao, and has a population of 8000. It is about 30 miles from the town of Cotabato, and is connected with it by a good road. The town is built on a hill, and is surrounded by a wall of stone, and has a number of mosques. The population of Sama is composed of three classes: the upper class, consisting of the nobility; the middle class, consisting of the merchants and traders; and the lower class, consisting of the laborers and peasants.

Sama is an island of volcanic origin, and is composed of scoria and pumice. The island is about 30 miles long and 15 miles wide, and has a population of about 100,000. The capital is Magindanao, which is the largest town on the island, and is situated on the east coast.

The climate of Sama is mild and equable, with an average temperature of 75°F. The rainy season is from May to October, and the dry season from November to April. The average rainfall is about 80 inches per year.

The economy of Sama is based on agriculture, fishing, and trade. The principal crops are rice, corn, bananas, and coconuts. The chief exports are rice, corn, and coffee. The island has a good port, which is used by foreign ships, and is connected with other islands by a network of roads.

The government of Sama is a constitutional monarchy, with a king as the head of state. The king is assisted by a council of ministers, who are appointed by the king and approved by the legislature. The legislature consists of a Senate and a House of Representatives, which are elected by the people. The supreme court is the highest court of the land, and is composed of a chief justice and seven associate justices.
The Negritos of Maguindanao 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 Maguindanao the Negritos are agriculturists, and the Malays who reside along the coast 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 by the Ilocos or Luzon traders, 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 Zamboales. The Malays are divided into three great divisions, the Tagalos, the Ilocos, and the Lakanises. The first tribe inhabits the neighbourhood of Manila and the country round the Laguna de Bay. The other tribes that are numerous, the Pampango, Zambales, Pangasinan, Ilocos, and Cordillera, 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 Yakanos, who inhabit the mountains cast of the Gulf of Lingayen, are distinguished by a 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 independent of the Spaniards and free subjects, and live as freely as 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 astonishment to the Spaniards, that, by travel, a year has not long since one of the Spaniards, whose number is very small (in 1818 it did not exceed 3500), 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, and which never rise against government except when excited by the clergy, which has been the case several times. Though such a subjection to the clergy would lead us to suppose that the people must be in a low condition, this supposition is contradicted by the easily, by the eyes of the Spaniards, well 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 6170 souls, who are also some Chinese, who, in 1818, were not more than 6201, of which number 1569 were Christians.

Political Divisions and Population.—The Philippines, as the name implies, are subject to Spain, and 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 Maguindanao. The population, in 1818, amounted, according to the census, to 741,142; and in 1821, according to the more accurate one, to 793,170. The population is subject to the payment of the capitation tax, to 3,203,760. The following tables exhibit the particulars:

1. Population of the Provinces on the Island of Luzon, or Neusa Castilla.

<table>
<thead>
<tr>
<th>Province</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Tondo</td>
<td>149,095</td>
</tr>
<tr>
<td>2. Bulacan</td>
<td>149,055</td>
</tr>
<tr>
<td>3. Pampanga</td>
<td>149,055</td>
</tr>
<tr>
<td>4. Tuguegarao</td>
<td>149,055</td>
</tr>
<tr>
<td>5. Ilocos del Norte</td>
<td>149,055</td>
</tr>
<tr>
<td>6. Ilocos del Sur</td>
<td>149,055</td>
</tr>
<tr>
<td>7. Camarines del Norte</td>
<td>149,055</td>
</tr>
<tr>
<td>8. Rizal</td>
<td>149,055</td>
</tr>
<tr>
<td>9. Benguet</td>
<td>149,055</td>
</tr>
<tr>
<td>10. Cagayan</td>
<td>149,055</td>
</tr>
<tr>
<td>11. Catanduanes</td>
<td>149,055</td>
</tr>
<tr>
<td>12. Camarines del Norte</td>
<td>149,055</td>
</tr>
<tr>
<td>13. Ilocos del Norte</td>
<td>149,055</td>
</tr>
<tr>
<td>14. Albay</td>
<td>149,055</td>
</tr>
<tr>
<td>15. Laguna de Bay</td>
<td>149,055</td>
</tr>
<tr>
<td>16. Bulacan</td>
<td>149,055</td>
</tr>
<tr>
<td>17. Cavite</td>
<td>149,055</td>
</tr>
</tbody>
</table>

The difference between the population of 1818 and 1821 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 226,487. |
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:—

564 families newly converted and still under the sway of the monks, composed of

788 families of friendly Y Gorretes in the province of Pangasinan, containing

200 families of Tinguanos in the provinces of Y Locos

1180 families of unconverted Y Gorretes in the same provinces

1523 families of non-converted Negritos in the same provinces

= 31,075

If these are added, the population of the island of Luzon, consisted, in 1818, of 1,438,566 individuals. 2. Population of the Islas Bisyas.

1818. 1817.
18. Mindoro, comprehending the islands of Mindoro.
4670 souls
Marinduque
9777
Islas de Luba
4349
19. Antique, or the western coast of the island of Panay.
59,597 50,100
20. Iloilo, or south-eastern part of the island of Panay.
176,201 230,410
21. Capiz, or northern part of Panay, including the islands—
Rombol and Sibuyan
3840
Bantug, Tabias, Simara, and Maestro de Campo
3244 65,262 120,520
22. Leyte, comprehending the island of Panamao.
1065
Panson
3765
40,623 92,165
23. Zebu, comprehending Zebu, and the islands—
Bantayan
5235
Siquijor
5748
Bohol
80,344
Daviz
4581
Panglao
13,346 160,099 250,817
24. Samar or Yabao, consisting of the island of that name, and the island of Capul, with 3013 inhabitants.
57,922 99,635
25. Calamianes, 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 Calamianes contain 2060 inhabitants and Paragua 11,097
13,157 16,092
26. Islas Batanias, which are situated north of the Strait of Bantungan, 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

= 619,378 937,533

Names of the Provinces.
1818. 1817.
26. Cagayan, comprehending the eastern coast of the island of Luzon
15,057 29,277
27. Misamis, embracing the northern coast east of the Bay of Sibugan
26,226 34,583
To these two provinces is to be added the Province of military establishment of Zamboanga.
8,640 10,000

= 30,823 74,560

P.C., No. 1114.

According to the census of 1818, the whole population was 2,108,707, to which however it was thought necessary to add 5 per cent. on account of some small errors, 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 census tax, which in 1792 amounted to 280,093, in 1815 amounted to 385,568, in 1805 " 317,641 " 412,679 1812 " 392,568 " 436,047 and in 1817 they amounted to 634,670.

Towns.—It may be presumed that in so populous a country there must be a considerable number of towns, but as travellers do not extend their excursions to any great distance from the road, Manila, we are not acquainted with them. In the census of 1817 considerable number of towns are mentioned with a population exceeding 5000 souls, and in 34 places it is stated 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 river. The streets are straight, wide, and well paved. The houses are built of stone, and are generally very large. There are several well-built churches and convents. The palace of the captain-general is distinguished by its architecture, but the custom-house, or a casino, 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 Hermits and Malate, which in 1818 contained 10,550 inhabitants. A well-built business town is on the city over the Pasig to Bidondo, a large place, which however only contains habitations built in the fashion of the Tagals, though it is the commercial town. In 1818 Bidondo contained 12,056 inhabitants. Contiguous to it on the beach is Tondo, the capital island 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 23,462. 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 100,000, 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 posts. The number of Comforts 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 1649, a nautical 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 Ensenada de la Esperanza, the only harbour in the Bahia de Manila. The arsenal is in that fortress, and vellas are built there. The fortress contained in 1818 only 1926 inhabitants, but the adjacent town of S. Roque contains 22,406.

Manufactures.—The Malays use very few manufactured goods exported from other countries, and they have applied themselves to some branches of manufacture with success. They make very good head-wear, which is 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 slips of wood. Hats made of the latter material are well 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 cigars, 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 was the commerce with Mexico, 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 Manila 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 the Philippines, and the islands are 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 1818, 1829, and 1839:

<table>
<thead>
<tr>
<th>Year</th>
<th>Sugar</th>
<th>Indigo</th>
<th>Sapan-wood</th>
<th>Rice</th>
<th>Cigars</th>
</tr>
</thead>
<tbody>
<tr>
<td>1818</td>
<td>14,405</td>
<td>12,074</td>
<td>138,387</td>
<td>11,089</td>
<td>13,863</td>
</tr>
<tr>
<td>1829</td>
<td>3,400</td>
<td>11,089</td>
<td>13,863</td>
<td>11,089</td>
<td>13,863</td>
</tr>
<tr>
<td>1839</td>
<td>5,000</td>
<td>11,089</td>
<td>13,863</td>
<td>11,089</td>
<td>13,863</td>
</tr>
</tbody>
</table>

1 pice = 140 lbs. 1 arroba = 93 lbs.

Manila carries on trade with Canton, Amoy, and Shanghai, in China; with Kamagkeha, 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, Cochin-China, Borneo, and the Sulu Archipelago. The Chinese junks from Shang-hae do not visit any port farther west than Manila. In 1818 the number of foreign vessels that entered the port of Manila did not exceed 61; they were, Spanish, Portuguese, French, English, American, 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:

<table>
<thead>
<tr>
<th>Nation</th>
<th>Spanish</th>
<th>American</th>
<th>English</th>
<th>Danish</th>
<th>Dutch</th>
<th>French</th>
<th>Portuguese</th>
<th>Hamburg</th>
<th>Russian</th>
<th>Other vessels, the name of the nation to whom they belonged</th>
</tr>
</thead>
<tbody>
<tr>
<td>1829</td>
<td>43</td>
<td>20</td>
<td>12</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>4</td>
<td>80</td>
</tr>
<tr>
<td>Total</td>
<td>118</td>
<td>186</td>
<td>164</td>
<td>184</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></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 1826 the value of the goods exported amounted to 1,475,034 Spanish dollars (331,882 liras), or bullion and specie to 52,496 Spanish dollars (14,052l.), in 1829 the goods to 1,397,623 Spanish dollars (314,656l.), and the bullion and specie to 52,273 dollars (12,012l.), and in 1830 the exported goods amounted to 1,457,621 (336,642l.), and the bullion and specie to 53,121 dollars (13,121l.). The value of the goods imported in 1828 amounted to 1,550,933 dollars (348,960l.), and of bullion and specie to 401,827 dollars (90,411l.), in 1829 the former to 1,634,503 dollars (372,263l.), and the latter to 398,647 dollars (92,650l.). In 1830 the imports of goods were to the value of 1,562,522 dollars (351,567l.), and of bullion and specie to the value of 178,063 dollars (40,064l.).

European vessels do not visit any other harbours of the Philippines except Manila, but it is very probable that the Bugis and inhabitants of Sulu, as well as the Chinese, who have a great number of junks in those 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 brigs, and in still smaller vessels, called galoes, goletas, pintos, etc. The number of these vessels is at least 10,000. The trade to the Philippines is principally carried on by the orders of Lopez de Legaspi and sent from Mexico to form an establishment, which he effected in the following year on the island of Zebu, the inhabitants of which submitted to the Spaniards without any resistance. In 1571 Legaspi founded the town of Manila; and as the Malays of the 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 of Luzon has disappeared among the inhabitants of the conquest had a greater tendency to war than the Moluccas. The Spaniards remained in undisturbed possession of the Philippines to 1762, when the English took the town of Manila. The inhabitants of Luzon however did not submit, but continued a war against the English and Spanish officer, though with no great vigour. In 1764 the English restored Manila to the Spanish government. The Philippines, together with the Marianas, are administered by a governor who has extensive powers, when necessary, to send armies into provinces, at the head of which is a governor, or alcaldes mayor; and the provinces are subdivided into pueblos, which have also their petty governor, and officers subordinate to him.

(Marcus S. Berthelot's Historia de Filipinas: the Philippine Islands; Ketzebeue's Voyage of Discovery into the South Sea; ; ; ; Meyen's Reise um die Erde; Ysidro de Aragon, Estado de la Poblacion de Filipinas correspondiente al curso de 1818; Forest's Voyage to the South Sea, Notices of the Indian Archipelago; Berghausen's Memoiren 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 an island in the number of islands situated in the Pacific, between 138° 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 very important and very valuable to the Spaniards, who obtained some knowledge of them from the natives who visited their settlement on the island of Guahan (Lafranres), claim the sovereignty of the New Philippines. They have however never made a settlement on some of 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 Lütke.

The islands, which lie either within the basins formed by the coral reefs, or contiguous to the reefs themselves on their interior side, are all small, and produce hardly anything except cocoa-nuts and bread-fruit. All the isolated islands have reef and some rise to 600 feet, but the island of Feys 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 of a circular form, enclosing a lagoon. The elevated islands have a great variety of trees and plants which afford food. The cultivated fields contain plantains and arens; from the root of the latter the inhabitants make the famous curare, with which they caliche many several fruit-trees besides the cocoa 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 kinds of islands and produces generally with high forest-trees, among which the caliche-tree is common. The inhabitants belong to the Malay race, and go nearly naked: they are industrious cultivators and fishermen. They make excellent mats, and canoes of a large size, with which they undertake voyages of several hundred miles.
PHI

PHI

visiting from time to time the Spanish settlements of Guahan, to which they bring such articles of agricultural produce as will bear the voyage. They are governed by kings: the government is not strictly hereditary, but partly elective. [Little, Voyage autour du Monde.]

PHILLIPUS was also the name assumed by the impostor Andricus, 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 officers. But he was ultimately driven out of Macedonia 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 Bostra in Trachonitis, according to some authorities, after serving with distinction in the Roman armies, was promoted by the later Gordianus to the command of the imperial guards after the death of Milethus, A.D. 243. [GORDIANS; MARCUS ANTONIUS PLUT.] In the following year he accompanied Gordianus in his expedition into Persia, where he contrived 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 Philippus as his colleague; and in a short time, Philippus 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 the Senate acknowledged 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 Orosius, Zonaras, and other Christian writers maintains that Philippus was a Christian, states merely as a report that he went with his wife to attend the Christian worship at Antioch, but that Babila, bishop of that city, refused to permit him to enter the church, as being guilty of murder, upon which Philippus acknowledged his guilt, and placed himself in the ranks of the penitents. This circumstance is also stated by John Chrysostom. From Antioch, Philippus came to Rome, and the following year, A.D. 245, assumed the consulsip with T. Flavius Furius. He was also found guilty of the crime of Maria, who had invaded Maria, and defaced them. In the year 247 Philippus was again consul, with his son of the same name as himself, and their consulsip was continued to the following year, when Philippus celebrated with great splendour 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 consulsip of Amilanus and Aquilinus, a revolt broke out among the legions, and was put down against the Corpi, who proclaimed emperor a certain Caravus Marius, whom however the soldiers killed shortly after. Philippus, alarmed at the state of those provinces, sent thither Decius as commander, but Decius had no sooner arrived at his post than the soldiers proclaimed him emperor. Philippus marched against Decius, leaving his son at Rome. The two armies met near Verona, where Philippus 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. 249. Eutropius states that both Philippus, father and son, were numbered among the gods. It is doubtful whether Philippus was really a Christian, as it seems certain, as stated by Eusebius and Dionysius of Alexandria, that all the Christians enjoyed full toleration and were allowed to preach publicly. Gregory of Nyssa states that during that period all the inhabitants of Nicaea were in Pontus embraced the Christian faith, and that it was most dangerous to be in the company of God of the Christians. It appears that Philippus during his five years' reign governed with mildness and justice, and was generally popular.

PHILIPPE, PROYNE (Proune), the name of several ancient physicians enumerated by Fabricius (Biblioth. Graec). The most celebrated is Philippe of Acrania, 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 Philippus 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 speedy recovery fully justified his confidence, and proved at once the skill and honesty of Philippus. (M. Orophi. II. cap. 13, 14, 15, Max., lib. III., cap. 8, in fine; Plut., cap. 19; Arrian, lib. II., cap. 34; Just., lib. XI., cap. 8; Diod. Sic., lib. xvii., cap. 31.)

PHILIP, AMBROSE, was born about the year 1671, and is said to have been descended from an old Leicestershire family. He was educated at St. John's College, Cambridge, and his first printed performance is a copy of English verses in the Collection published by that university in the death of Queen Mary, in 1695. From this date nothing is known of him till the appearance of his six Pastoral Poems, 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 schools of those poets, that is, in Tonson's Miscellany, which appeared in 1706, and probably they had not been printed before. Philip's next performance was his 'Letter from Copenhagen' (in verse) to the earl (afterwards duke) of Dorset, dated March 20, 1699, which was printed in the 12th No. of the 'Tatler' (May 7, 1709), with an introductory eulogium by Steele, who styles it 'as fine a piece as we have ever had from any of the schools of the most learned painters.' He afterwards transmitted the 'Pastoral' to Pope, who brought it out, after the 'Tatler' had ceased to appear, in the form of 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, who a 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 Philip partly by feelings of poetical rivalry and jealousy, partly by their opposite party politics, told his friend Spenzer 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 appearance of the play, in the 20th No. of the 'Tatler' (for 1st February, 1712); and Addisson, in the name of Budgell, wrote an epilogue for it, which took so greatly, that, according to Johnson, on the three first nights it was recited twice; and not only continued to be demanded through the run, as it is termed, of the play, but, whereas it is recalled to the stage, the epilogue is still expected, and is still spoken.' Other 'Spectators' were devoted (No. 335, for 25th March, 1712, by Addison) to an account of the strong impression made on the spectators by the treatment of Coverley; and (Nos. 338, for 28th 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 Philip's resignation of the 'Tripper's Hymn to Venus' had been printed, with strong commendation from Addisson, both of that poem and of the author's 'admireable pastoral and winter-piece,' in the 'Spectator,' No. 282 (for 16th November, 1711); and the pas-
PHI

92

PHI

torals are again highly praised in Nos. 400 (for 9th June, 1712) and 523 (for 30th October), by Addison; and likewise in the ‘Guardian,’ No. 30 (for 15th April, 1713). But now Pope is no longer equated to the gullible or careless nature of Steele, by imposing upon him as a serious critic an ironical discourse on Philips’s Pastoralas as compared with his own, in which, while the superiority was confessed to Philips, the imitation and, opinion that the whole 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 passage, which forms the No. 278 of the ‘Guardian.’ (For 278th August) Appearances must at first have perplexed and puzzled the public; but Addison’s quick eye detected at once the mockery which had escaped his more inattentive or more unsuspecting friend. This affair gave rise to much ridicule and many pamphlets, which, however, never healed. For many years Pope continued to make his unfortunate contemporary his butt; in particular, Philips’s verses will be found to furnish, along with those of Blackmore, Theobald, and Welsted, the choicest specimens in the famous treatise of Martinus Scriblerus on the ‘Art of Sinking in Poetry.’ To all this persecution Philips had nothing to oppose but threats of personal chastisement, which had however the effect of making the satirist keep close to his art. Meanwhile his fame, which had previously been in a most flourishing condition, was undoubtedly very seriously damaged even by Pope’s first inaudible attack; he continued indeed to rhyme notwithstanding, but his monitor was Addison. After that period the ‘Guardian’ brought him much reputation. Conceiving himself to have a turn for simplicity and natural expression, he fell into a peculiar style of verse, in which the lines were very short, and the thoughts and phrases apropos to the infantine; and this the public were taught to call ‘Namby-pamby,’ a name first bestowed, we believe, not, as has been stated, by Pope, but by Henry Carey, the author of ‘Sally in our Garden;’ and ‘Commonplace Booksm’; a volume of poems published by whom in 1737 contained one so entitled in the form of a burlesque on one of Philips’s productions. If the muses failed him however, Philips was consoled by the favour of his party and by considerable success as a politician. Soon after the accession of the House of Hanover, which fixed his Whig friends in power, he was made a commissioner of the lottery and one of the justices of the peace for Westminster, the latter, in those days, an appointment more lucrative than honourable. In 1721 he produced two more tragedies, ‘The Briton,’ and ‘Humphrey, Duke of Gloucester,’ both now forgotten. He next engaged in a periodical paper called ‘The Craftsman,’ which one of his friends, Dr. Boulter, who was afterwards made bishop of Bristol and then archbishop of Armagh, and who, when he went over to Ireland, took Philips with him, and provided so well for him as to enable him to represent the county of Armagh in parliament, that he was sent by the judge of the Prerogative Court in Ireland; but resigned that place in 1748, and returned to his native country, where he died of a stroke of palsy, on the 8th of June, 1749. PHILIPS, JOHN, was the son of Dr. Stephen Philips, archdeacon of Salop, and rector of Bampton in Oxfordshire, at which latter place he was born, in 1676. Having received his school education at Winchester, he was entered at Christ Church, Oxford, in 1694. It is said that he intended to follow the medical profession; but it does not appear that he pursued that object further than by engaging with much zeal in the study of botany and natural history. He first became known either by his college, or university, by his poem entitled ‘The Splendid Shilling,’ which appeared in 1703. His intimate friend Edmund Smith says, in a fragment of a discourse on the works of Philips, which Dr. Johnson has printed, ‘This poem was written for his own diversion, without any design of publication. It was communicated but to me; but soon spread, and fell into the hands of pirates. It was put out, vilely mangled, by Ben Drage, and impudently said to be corrected by the author.’ The poem is not now printed, as a copy-book kind, the verse being an imitation of that of Milton. Of course, it is absurd to contend, as has been done, that Philips here makes the little appear great, and is therefore to be despised and set aside; for much paradoxes as only make the great appear little, as, e.g., for example, Cowper and Scarron. The truth is, that in both cases the great is made to appear little; what of piquancy there is in Philips’s poem does not arise from any exaltation of the shining, but from the application of the versification and expression of the anecdotes. Milton, however, is not so much the author of the poem as of the title. His next poem, entitled ‘Blenheim,’ at the instigation, it is understood, of the Tory party, who wanted a poetical effusion on that victory to rival Addison’s; but, notwithstanding an invitation, and a promise of a reward of 300 guineas, Philips, who had been, like his prototype Milton, on the wrong side in politics, but principally to his readers having formed their taste upon French models, whence they had learned to admire points and turns, and consequently had no judgment of true greatness of style and effect, was content to publish his ‘Splendid Shilling.’ Philips’s ‘Blenheim’ found comparatively few admirers in that day, and has been generally forgotten since. His friend Smith attributes the general unpopularity of this poem to the following circumstances: ‘It has been little noticed, except in miscellanies and periodicals, which, whatever they may have been, have never been published in two books, was published in 1706: like everything else that he wrote, it is in blank verse, and an echo of the numbers of ‘Paradise Lost,’ but, as a poetical composition, it belongs to the same class as Virgil’s ‘Georgics,’ and consequently it is, as well as the ‘Blenheim,’ a serious, not a mock, imitation of Milton. Johnson says he was told by Miller, the eminent gardener and botanist, that there were many books written on the same subject in prose which do not contain a single sentence of truth, and to which the excess of consumption and asthma put an end to the life of this amiable man, on the 15th of February, 1708, when he had just completed his thirty-second year. His friend and fellow poet, Voltaire, erected a monument to his memory in Westminster Abbey, which carries a long inscription in very flowing Latin, said by Johnson to be the composition of Bishop Atterbury, though commonly attributed to Dr. Friend. One passage is especially remarkable as expressing a notion of the perfection of verse, in which the writer of the inscription must have found himself widely at variance with the reigning taste of his day. Philips, says, ‘The poetical forms he wrote in his native tongue, had lost, from the influence of Greek and Roman song, to measure the harmony of verse, the syrmo . . . antiquo ilio, libero, multiformi, ad res ipsas aptos prursus at computato, non numeris in undecim fern orbis redemptione, non clarissimis antiquis canonicis sonis.’ Curiously opposed to this stands the criticism of Johnson:—‘Deformity is easily copied; and whatever there is in Milton which the reader wishes away, all that is obsolet, peculiar, or licentious, is magnified and supported by Philips. Milton’s verse was harmonious in proportion to the general state of our metre in Milton’s age; and if he had written after the improvements made by Dryden, it is reasonable to believe that he would have admitted a more pleasing metre, and much fewer numbers, and have sat down with a resolution to make no more music than he found—to want all that his master wanted, though he is very far from having what his master had. The asperities there are in Milton’s verse more from a want of expression than from an attempt to be magnificent, as in the ‘Blenheim.’ The insensibility which would have had Milton to take lessons in the music of verse from Dryden is startling enough; but there is justice in the contempt expressed for the inimitable Miltonian of Philips, who was without any true passion, or strength or elevation of fancy, and whose poetry in its most ambitious passages has little more than merely something in the sound to remind us of that of Milton.

PHILISTINES. [PALESTINE.] PHILL/STION (Φιλοστίων), an ancient Greek physician, the tutor of Eudoxus and Chrysippus. (Diog. Laert. Vit. Philos., lib. viii., cap. 8, sec. 66 and 89.) He is called a Sicilian by Diogenes Laertius (lib. viii., sec. 66), but if the same person be meant he is said to have been an Italian by Rufus Ephesius (De Corp. Hum. Part. Appell., p. 41, ed. Clinck.), and a Locrian by Plutarch (Sympos., lib. vii., quest. 1, sec. 3). Aulus Gellius (iv. 7, cap. 12, sec. 6) Academy (Dea., lib. viii., cap. 1, sec. 3, and Athenaeus (Deipnosophists, lib. viii., cap. 83, p. 655). He lived about the year 370 B.C., Ol. 102, 1. According to Plutarch and Aulus Gellius (loci cit.) he defended the doctrine that part of what is drunk goes down into the lungs, which is a remarkable doctrine for one who was well skilled in anatomy. He belonged to the sect of the Empirics (Galen, De Subst. Empir. cap. i.), and was supposed by some persons to be the author of the treatise ‘De Victu Solut.,’ attributed to Hippocrates. (Galen, Opera, tom. x. p. 455; tom. xiii. p. 9, ed. Kuhi.) He
that a catalogue of them, to 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).

PHILOLAUS, a native of Crotona, flourished about B.C. 374. He was a Pythagorean, a disciple of Archytas, and the first who wrote on the subject of Physics. He sold his works, at an enormous price, 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).

It is not possible to give a precise meaning to this word, as it is used in different significations by different writers. Among the Greeks and Romans, the term philosophy was originally used to signify a love for the investigation of all subjects connected with literature. (Plat. Theset. c. x. p. 146; c. xii. p. 161; Cic. ad Div. xvi. 21: Erasti, Clitus Cicorion, under συλλογήτερα.) The Alexandria critics applied the term philosophy to a person who was well acquainted with the ancient Greek writers and with the subjects treated 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 consequence of his extensive and profound knowledge in all sorts of sciences. At other 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 philologus 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 'Grundriiss der Philologie,' Landshut, 1808, and the first essay in Wolf and Buttman’s 'Museum der Akad. Wissensch.' Berlin, 1806.

PHILOMELA. [Syll. SYLVIADA.]

PHILOMELINAE. [Syll. SYLVIADA.]

PHILOMELUS. [Phocis.]

PHILOPENOM, the son of Crispus or Creasus 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 Creatus. He was afterwards placed under the tuition of Eudemus and Demosthenes; and on the recommendation of his 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 of all studies, and designed to persevere in it.' When he attained the age of manhood, he 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 [Cleomenes 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 themselves with Antigonus Doson, king of Macedonia, that prince came into Peloponnese, and defeated Cleomenes at the battle of Cynus, 222 B.C., to which victory Philopomen mainly 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 desolated that island. During this campaign he greatly improved himself in strategy. Aratus died B.C. 215, and Philopomen, returning home, formed an attack upon the Achsean cavalry. He improved the discipline of that body, recruited its strength, and made it completely efficient. In a battle which was fought near the river Larissus, he defeated the Achseans and put to flight their king and killed with his own hand Demophonatus, the Elean general. He also effected many improvements in the tactics and discipline of the Achsean infantry, and introduced the Macedonian order of battle. War having broken out between the Achseans and Machanidas, tyrant of Sparta, Philopomen marched against the Spartan, and defeated him near Mantinea. Machanidas fell in the battle, by the hand of Philopomen. In consequence of this exploit, the Achseans voted him a statue of bronze, which was placed in the temple of Delphi. In 201 B.C. Philopomen left the Achsean league, of which, from that time till his death, he was considered as the principal leader, having succeeded Aratus in the confidence of the people. Philopomen being a great obstacle in the way of Philip of Macedon, who wished to extend his sway over the independent states of Greece, the king tried to have him assassinated, but the plot was discovered, and only served to increase the influence of Philopomen. As Philip died in the winter of 200, 199 B.C., and Philopomen succeeded Machanidas, the Achseans, in 198 B.C., seized Messenia, but Philopomen drove him out of that country, and restored the Messenians to their independence as allies of the Achseans. Wanting employment at home, he went a second time to Crete at the request of the Gur- tyrians, and served in the wars of that island. Returning home about 197 B.C., he found Philip beaten by the Romans under Flamininus, and obliged to sue for peace, the Achseans allied to Rome, and Nabis at war both with the Achseans and with Rome. Philopomen equipped a fleet against Nabis, but he failed in his naval operations. He then attacked him by land and defeated him; and Gythium and the other seaports of Laconia, being taken from Nabis, were occupied by Achsean garrisons under an agreement with Flamininus, the Roman commander. When Nabis was murdered by his Alotelian auxiliaries, 192 B.C., Philopomen marched upon Sparta, which was in a state of great confusion, and obliged the citizens to join the Achsean League, which had concluded all the Peloponnese, with the exception of Elis.

During the subsequent war against 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 Achseans, that while Antiochus and the Romans were contending with two such powerful armies in the heart of Greece, the duty of an ally was to remain out of the war, '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 Achseans, joined to the Laconian emigrants who had been received by Philopomen under 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 captured, and sent two of those who were present in the city to the Roman Proconsul Fulvius, who had just executed the subjugation of the Alotelians, 189 B.C. Philopomen, who was strategos of the Achseans for that year, devastated Laconia. Fulvius came into Peloponnese, and advised both parties to send messengers to Rome, and to suspend all hostilities. The Achseans sent Diophanes and Lycorbas, the father of the historian Polybius, the senator returned an ambiguous answer, which the Achseans 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 Achsean alliance, with a promise that they would not suffer for it. But when several of the persons implicated in this affair came forward and went voluntarily to the Achsean camp, accompanied by others of the principal citizens of Sparta. As they approached the Achsean camp, the emigrants who formed the Achsean advanced-guard, on the approach of the Lycurgans, 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 Roman commissioners, and found that they were genocidal men, and called 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 destroyed, and the town should be restored to them, all the mercenary troops should quit Laconia, as well as all 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-
duced to rebuilding a portico in Megapoli which had been destroyed by Cleomenes. But the hardest condition which Plato imposed upon them was that of abolishing the laws and discipline of Lycurgus, and obliging the Spartans to adopt the institutions of the Achaeans and bring up their children after the Achmean fashion, being convinced that the Spartiates were so formidable because they had huddled so long as they adhered to their 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 found their main support in the constitution of the states of Greece. 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. This spirit was found in the consul Q. Metellus, on his return from Macedonia, where he had been on an embassy, appeared before the council of the Achaeans assembled at Argos, and complained that they had treated the Spartans with undue severity. Aristides, the strategist for the year, was in the Roman interest, and Diophanes also blamed the conduct of Philopomen; but Lycortas 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 Aristides towards the Romans, is reported by Plutarch to have exclaimed, 'And why in such haste, wretched man, to see an end of our unhappiness? Go you, man of hate! have you undertaken to justify their conduct, and the Spartans, on their side, sent two of the restored exiles, who took a violent part against the Achaeans. The senate, having heard both parties, sent Appius Claudius and others as commissioners to the Peloponnesus, where the 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 denunciation of its walls, and the abrogation of the laws of Lycurgus. It was on this occasion that Lycortas made that eloquent speech in reply which is given by Livy (xxxix. 36, 37), in which, after denouncing the measures taken by the Achaeans against the Romans their own conduct towards the free state of Caria during the second Punic war. The speech of Lycortas 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 advised the Achaeans to do with a good grace what otherwise they would be obliged 'to do against their will. The congress then declared, that rather than reverse their former conduct, they would redouble their efforts, and change the terms they thought proper. The senate, seemingly satisfied with this submission, allowed Sparta to continue in the Achsean league, on the condition of a general amnesty and the payment of fifty talents of gold.

In the beginning May, 183 B.C., Philopomen, then seventy years of age, was elected strategos for the eighth time.

About this time Messenians, through the influence of one of its citizens named Dinocrates, threw off the alliance with the Achaeans. It appears from some passages of Polybius that Dinocrates was a friend of Flamininus, the Roman general, who had just been appointed ambassador to Ptolemais, king of Bithynia, to demand of him the person of Hannibal. Flamininus, on former occasions had shown that he was no friend to Philopomen, and indeed the personal character of the latter made him obnoxious to the Roman policy. Flamininus, on arriving at Naupactus, was asked if he had any instructions from the senate for the purpose, decided to do so, and proceeded for the purpose to fight against Philopomen, without the body of cavalry, but finding a stout resistance, he was obliged to fall back. Being the last to retire, he was surrounded by the enemy, thrown from his horse, wounded in the fall, and taken prisoner to Messene. The clemency of Flamininus and his ministers was a few of the leading men of the faction of Dinocrates determined on getting rid of him. They put him in a dark dungeon called 'the Treasury,' and in the night they sent the executioner to put him to death. The prisoner, however, ascertained whether he knew what had become of the Achsean cavalry, and especially of his friend Lycortas? The man answered that they had retired in safety. 'Then we are not altogether unhappy,' observed the aged general, and he took the cup and drank the poison, which soon put an end to his life (183 B.C.). The news spread far and wide among the Achseans. Lycortas, being appointed strategos, marched to avenge the death of his friend. The Messenians opened their gates, Dinocrates killed himself, and the remains of his friends were given to Philopomen being burned, the ashes were collected in a urn, which was carried by young Polybius in solemn procession of the Achsean army to Megapoli. The Messenian prisoners who had been concerned in the death of Philopomen were put to death. Philopomen himself is said to have been styled by some the last of the Greeks: he was certainly the last of their successful commanders.

Plutarch, Philippides; Polybius, xxiii.; Fragments, iv. 5; Livy, xxxix. 36. 37.

PHILOSOPHIA. [IOPONI, vol. xiii. p. 52.]

PHILOSOPHY, from the Greek philosophia (philosophia), literally signifies 'love of wisdom or knowledge,' and a philosopher (philosophos) is a 'lover of wisdom.' Pythagoras (Diog. Laert. Proc.) is said to have first used the term philosophy, and to have called himself a philosopher, instead of a sophis (sofis), or 'wise man,' for, he added, no one is wise but God. Among the Greeks, philosophy was sometimes viewed as comprising or consisting of three parts: physico (φυσικό), ethical (ἠθικό), and dialectic (διαλεκτικό). Physico viewed the universe and that which it contained; ethical treated of things that concerned human life and man. The term dialectical was used by the Pythagoreans. This division of philosophy is in itself of no value, and is merely a matter of history.

The terms philosophy, philosopher, and philosophy, are often used in our time, without any precise meaning, or with no great precision, though it is not difficult to deduce from the use of these terms the general meaning or notion which is attached to them. We speak of the philosophy of the human mind as being of all philosophies that rule more than any other, and philosophy is particularly appropriated; and when the term philosophy is used absolutely, this seems to be the philosophy that is spoken of. Other philosophies are referred to their proper objects by which they are properly called. We speak of philosophy of natural philosophy, meaning thereby the philosophy (what ever that word may mean) of nature, that is, the term nature is generally understood, of material objects. We speak of the philosophy of positive law, understanding thereby the philosophy of natural philosophy (what ever that word may mean) of those laws which are called laws. The terms philosophy of history, philosophy of manufactures, and other such terms, are also used. All objects which can occupy the mind may have some philosophy. The thing in common to all these objects is that there is a difference between things as they conceive them. The philosophy which comprises within itself all philosophies is that which labours to determine the laws or ultimate principles in obedience to which the mind itself operates; and those laws or ultimate truths, which must be considered as constituting the mind what it is, and which are therefore independent of all external impressions, and those laws by which the mind operates upon the sensuous impressions produced by objects which it conceives and can only conceive as being external to itself.

Thus every kind of knowledge, the objects of which are things external, has its philosophy or principles, which, to his bit for sense. The new form for things external, which has been discovered, for things which 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 form, viewed independently of the objects of knowledge, be such as are capable of being discovered by observation, we can arrive at an 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 upon it, seeks to discover and know the ultimate foundations of all that it knows or conceives; to discover what it is, and what it is 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, the proper and absolute sense of the term, and the attempt to form such a system is to philosophize. Systems of philosophy have existed in all nations; even in the most uncivilized, 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 whom he conceives to be the author of all things, and to limit of as many 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 who have been educated, 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, when traced in the history of some human mind towards the knowledge of itself, a knowledge which, imperfect as it is, is the accumulation of many centuries, and the work of many contributors.

PHILOSTOGUS, 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 the 'Bibliotheca,' and (see robilbon, Cod. 40.) Photius inveighs against the author as a heretic, and an apostate of Arius, Eusebius of Nicomedia, Apollinaris, and other heretics. Philostorgius was a man of general information, and he inserted in his narrative many geographical and other details of remote countries, especially 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 the saints, of which the author himself was not an eyewitness. The epitome was translated into Latin, with comments, by J. Guthred, 4to., Geneva, 1642, and also by H. de Valois, 'Compendium Historiae Ecclesiasticae Philostorgii,' quod difficilior est lector, Paris, 1667. It has also been translated into French: 'Abregé de l'Histoire de l'Eglise de Philostorge,' Paris, 1767.

PHILOSTRATUS, FLAVIUS, a native of the island of Leucadia in the second half of the second century of our era, taught rhetoric first at Athens and afterwards at Rome, where he became known and was patronised by the empress Julia, the wife of Septimius Severus, who was partial to the learned. He undertook to compile the biography of Apollonius of Tyana from some memoirs written by a certain Damis of Nineveh, who had accompanied Philostorgus in his peregrinations, and which had come into his possession. Philostorgus professes also to have used for his collection a collection 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 were also collected by the biographer himself also, according to his own statement, of the narrative of a certain Maximus who had known Apollonius. [APOLLONIUS OF TYANA.] The book of Philostorgus displays great credulity, 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 Philostorgus was to write a parody of the life of Christ, but this seems doubtful: the parody, if intended, is not so success: besides which, it appears from the testimony of Lampridius ('Life of Alex. Severus'), that Christ was really worshipped by some of the later heathen emperors, together with Abraham, Orpheus, and Apollonius, these being as well as the sun and other heavenly bodies; and the 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 Saviour's death. The emperor Julia, a Sy- rian by birth, was probably fond of the marvellous, and Philostorgus indulging in her, inserted in his book all the wonderful stories he could collect relative to his patron. He, however, that of the time of the great struggle between the heathen and Christians, and it is possible that the Diocletian 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 narrations. Hierocles, a friend of Alexandria, and an enemy of the Christians, wrote a book with that object, in the shape of a comparison between the Life of Apollonius by Philostorgus and that of Christ, of which book Eusebius wrote a refutation: 'Eusebii Pamphil Autamndversiones in Philostrato de Apollonio Tyanae'. Containing a comparison between the life of Jesus Christ, 'Comparisonen, adnotationes.' Lactantius ('Divin. Insti., v. 3) also combats the same notion as absurd. St. Augustine ('Epist. 4') alludes to Apollonius as a magician whom the heathens compared with Christ. (See Tillemont, 'MemorialesTemperum, vol. ii., and Bayle's article 'Apollonius of Tyana.')

The other works of Philostratus are: 1. 'The Lives of the Sophists,' in two books; 2. 'Heroics,' or comments on the lives of the great philosophers; 3. 'Hermes,' or descriptions of 64 paintings which were in a portico near Neapolis by the sea-shore (these descriptions contain valuable information concerning the state of antient art); 4. Epistles, mostly erotic, excepting a few on matters of literature: one, which is inscribed to Julia Augustus, is an apology for the sophists. Philostratus wrote other works, such as 'Lexicon Rhetoricon,' &c., which are lost. His nephew, who is styled Philostratus the Younger, who lived under Macerinus and Eligabalus, wrote also a book of 'Irones,' which are not descriptions of actual paintings, but are so many subjects proposed to painters.

Oleon, one of the existing works of the two Philostratii, with a Latin version, fol., Leipzig, 1709, including also some letters attributed to Apollonius and the work of Philostratus against Hierocles. 'The Heroics' of Philostratus were edited by Boissiade,Paris, 1806, etc., upon a full collection of ancient authors on this subject. "Report of both the Philostratus appeared at Leipzig, 1825, svo., with a comment of F. Jacobs, and notes by F. G. Wecker.

PHILOTAS. [PARMENIO.] PHILOXENUS, as mentioned only two works by Philoxenus, the most rapid painter of antiquity, the 'Fa presto' (Luca Giordano) of the antients.

Philoxenus was particularly distinguished for a Battle of Alexander and Darius, which, according to Pliny, was not inferior to any of the productions of ancient painting. It was painted by order of Cassander, king of Macedon, and therefore probably not long after the hundred and sixteenth Olympiad, or 316 B.C.

It is said that the large mosaic, apparently representing the battle of Issus, which was discovered in the year 1831, in Pompeii, in the so-called house 'del Fauno,' and is still preserved there, is a repetition of the celebrated picture of Philoxenus. The figures of Alexander and Darius being the two most conspicuous figures, the design and composition of the work are so superior to the execution, that its original has evidently been the production of an age long anterior to the degenerate period of the mosaic itself. With the single exception of the execution, the mosaic exhibits, in every respect, merits of the highest order, and is certainly one of the most valuable relics of antient art: the composition is simple, forcible, and beautiful, and its original, if not actually a production of the most renowned times of Grecian painting, still cannot have been far short of meritting the commendation bestowed by Pliny upon the battle-piece of Philoxenus.

Pliny mentioned two works by Philoxenus, the one alluded to, and a lascivious piece, in which were three satyrs feasting, a style of art much in vogue with Grecian painters, even of the best days.

PHILOXENUS. [I.] 'The statues way,' was a potition given among the Greeks and Romans to excite love. It is doubtful of what these potions were composed, but their operation was violent and dangerous, often depriving those who drank them of their reason. 'Ovid, 'Ar. Amor.,' l. 160.) Lucretius is said to have died from drinking a portion of this kind, and the madness of Caligula is attributed by some to a similar potion, which was given him by his wife Cleopatra. (Suet., 'Caes.,' 56; 'Jul.,' vi. 615, 616.) The most powerful love potions were the 'Physic of Love,' and 'Love speaks' (vi. 610) of Thesala philtia.

PHILLYRA, Fabricius's name for a genius of the tribe of Leucosmi. ['Oxystomes, vol. xxii,' p. 110.]
The Phlegyas are small crustaceans, with a circular and depressed carapace, the front of which is much less advanced than that of the true decapods, their pincers being entirely absent or reduced to small lateral organs. They are entirely naked; the carapace is curved in flexion, and the buccal frame is nearly circular anteriorly; the principal portion of the external jaw-feet is triangular, as in the other Leucosiina, but the palpi or external mouth-feet are wanting. They are usually seen in the mud, and are sometimes described as having a curved line. Feet of the four last pairs with the tarsi depressed and nearly lamellar. Nothing else remarkable. (M. Edwards.)

Phlegeton {Phlegyas}. (Pl. to M. Edward's Hist. Nat, des Crustacés, pl. 26, figs 9 and 10.) Colour rose grey; length six lines.

Locality—East Indies.

Phlegeton is the name secured by the air passages. [M.] In classical acceptation the term includes nearly all materials coughed up from the lungs.

Phlegeron (Phlegyas), a native of Tralleis in Lydia (Suidas), a freedman of the emperor Hadrian. (Vopiscus, in Saturinum, p. 245; Spartius, in Hadrianum, p. 5, et in Scerenti, p. 71, ed. Salmasius, Par., 1620; Photii Biblioth., coll. 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 Ol. 229—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 Προ τον Μωρανιον, De Mirabilibus veterum, an epitome of the Greek chalices, which he quotes (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, Προ τον Μωρανιον, Προ τον (the same) Μυθολογιον, which also remains a chapter Προ τον Ολυμπιον, De Olympia, which is supposed by Salmassius (Ad Spartan, p. 43) to be the preface to a lost work, De Olympinicias. He mentions De Mirabilibus, cap. 26-10, and various curious facts on hermaphrodites (διαμεραφροδιτοι), or persons supposed to be women who afterwards turned out to be men. (For similar instances see Cyclop., of Anat. and Physiol., art. Hermaphrodite, p. 692, Suidas.) He quotes Craterus, the brother of King Antipater, De Longinus, cap. 22, as saying that he had known a person, who, within seven years, was an infant, a youth, an adult, a father, an old man, and a corpse. (For similar instances see Good's Study of Med., c. v., ord. 2, gen. 2, sp. 1.) He gives several instances of monstrous births, and of three, four, and five children being born at once, and says, on the authority of Megasthenes, that the women at Palmae become mothers at six years old. (Ibid., cap. 23, and 202nd.) He quotes also many instances of persons who lived more than a hundred years, but says that the Erythraean sibyl attained nearly the age of one thousand. (De Longinos, cap. 4.) He speaks of a child who was able to converse with men at the age of only nine and forty days old. (Steph. Byzant., De Urb. in Germania, p. 251.)

But what has made Phlegon's name more familiar among the moderns is his being cited, though a heathen, as bearing witness to the accomplishment of Christian prophecies. (Origen, Cont. Cels., lib. ii., § 14, p. 69, ed. Spengler, Cantab., 1677.) The passage referred to is as follows:—Phlegon, in the thirteenth, or, as I think, the fourteenth book of his Chronicles, ascribes to Christ the knowledge of some future events, and, though he makes no mistake in the person, naming Peter instead of Jesus; and he allows that he things the foretold came to pass. Upon this Lardner remarks (Credibility, Pt. II., "Heathen Testimony," ch. 13) that "Origen says that the rumors were so wide and so various that the '../../../includes/contents/12892/018-019.html'" that, if Phlegon named Peter instead of our Lord, it is a mark of carelessness and inaccuracy; 3 that, for want of seeing the passage more at length, we cannot form any clear judgment about it; 4 that Phlegon was so credulous, that his testimony concerning things of a marvellous nature must be of little weight; and 5 that Origen is the only person that has mentioned this. He concludes therefore that 'upon the authority of the Rev. Mr. Mount Grillo on the west coast of Lucernus [Agnano; Averno]; in short, the whole district round Pozzuolo, bounded on the east by the hill of Posilipo, which separates it from the basin of Naples Proper, and from the valley of the river Aterno, passes through the valleys of the river Calore, the whole volcanic region west of Naples, which extends on the other side of the hills of Baia and south-west to the Monte di Procida, and also beyond the narrow channel called
PHO

Boeche di Prooco, incluidng the island of that name and the neighboring island of Ischia [Ischis]. Breitkastel, in his "Topographia Fisica della Campania," gives a good description of this volcanic tract, with a map of it. See also G. Pouletten Scrope, 'On the Volcanic District of Naples,' in vol. ii., of the second series of the 'Geological Transactions.' The description of the hill of Solfatara, about 300 feet in height, which emits almost continually a sulphureous steam through several fissures, the other craters of this region have been long extinct.

Poetic descriptions of the volcanic phenomena exhibited by the Phlegraean Campi have been given by Virgil, Petronius Arbiter, and other Latin poets. Diodorus Siculus (iv. 21) says that this region, in which Hercules defeated the Libyan giants, was once a mons ignis or mountain of fire, which had once put up flames in the same manner as Mt. Etna, retaining 'still the traces of former eruptions.' This hill was probably that now called Solfatara, though Diodorus adds, that 'in his time it was called Vesuvius,' but this must be an error either of the author or of the copyist, as Vesuvius, in the time of Diodorus, had not begun to vomit flames. Besides this, Diodorus characterizes the region, which he describes as being near the shores of Cumae, which description could not apply to Vesuvius. Strabo, however, in his 'Geography,' says that the Cumae, as some suppose, was called Phlegra from the circumstance of its being full of sulphur, and fire, and hot springs.

Plants. The genus of grasses, contains, among many unimportant species, one of considerable agricultural value. This, the P. pratense, or meadow cat's-tail grass, is a general inhabitant of the most fertile pastures, and is regarded as a sign of fertility. It bears its flowers in a long cylindrical spike, and is extremely like the meadow foxtail (Alsosperma) in appearance; from which it differs in having unequal glumes, and two palea instead of one. This plant is very productive, especially in the early spring, and is a very good kind of hay. Nevertheless, according to Mr. Low, it is not a peculiarly good hay-grass, from the wiriness of its stem and the shortness of its aftermath. It is of the greatest use when the object is to procure a sward of dry grass.

PILGERMY'S, Mr. Waterhouse's name for a subgenus of Murid, which is in the habit of feeding chiefly on the bark of trees, according to Mr. Cuming, after whom the typical species (Mus t/lateranea) Cumingii is named.

Locality.—The Island of Luzzo. (See further, Zool. Proc., 1839.)

PHLOGISTICATE AIR. [Azote.] This is the name given by the ancients to the phosphoric or phlogistic air, by supposing the existence of which Stahl [Stahl] explained the phenomena of combustion. He imagined that by combination with phlogiston a body was rendered combustible, and that its disengagement occasioned combustion, and after its evolution the substance left either an acid or a base; thus the phlogiston was by this theory supposed to be composed of phlogiston and sulphuric acid; and lead, of the caia of lead and phlogiston.

At this period however oxygen had not been discovered, and although Jean Rey had shown that metals by burning increased in weight, and Hooke and Mayow had attributed combustion to the presence of the air in which it occurs, yet the doctrine proposed by Stahl maintained its ground for about half a century. Soon after the discovery of oxygen by Dr. Priestley, the experiments which others had made on the calculation of the metals were repeated with great accuracy by Lavosier; the consequence was, that the phlogistic theory was given up by the antiphlogist; for the combustion, which had been attributed to the extraction of phlogiston, was known in all common cases to be derived from the absorption of oxygen, and this explained the increase of weight which had been ascribed by combustion, whereas on the phlogistic theory they ought to have suffered a diminution by the process.

PHLORIZIN, a peculiar vegetable matter which exists in the seeds and roots of apple, pear, cherry, and plum trees. According to Stas, it is most readily obtained, and in large quantity, by treating either the fresh or dried roots of the apple tree with weak alcohol at the temperature of about 140° Fahr. When the digestion has been continued for some hours, the solution is poured off, and the alcohol distilled; the residual liquor on cooling deposits phlorizin, which is to be rendered colourless by carbonic acid.

Phlorizin, when deposited from a saturated solution, has the form of silky tuffs; 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. The plant spirit also readily takes it up, and at all temperatures; neither, even when boiling, dissolves only traces of it, though, when mixed with alcohol, it dissolves very well; it has no action on vegetation.

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

<table>
<thead>
<tr>
<th>Substance</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrogen</td>
<td>5·4</td>
</tr>
<tr>
<td>Carbon</td>
<td>58·6</td>
</tr>
<tr>
<td>Oxygen</td>
<td>30·6</td>
</tr>
<tr>
<td>Azote</td>
<td>100</td>
</tr>
</tbody>
</table>

Phlorizin is by various processes, described by M. Stass, converted into phlorizin, phlorin, and phlorin acid; for an account of these, we refer to his memoir contained in the 6th vol. of 'Annales de Chimie et de Physique.'

PHOCA. [Straits.]

PHOCA. [Jonia; Marseille.] PHOCENA. Cuvier's name for the Porpoises, Mar- somas. [Straits.]

PHOCAS, a native of Asia Minor, of an obscure family, entered the army under the reign of the emperor Mauritius, and attained the rank of a centurion. He happened to be the companion of 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 mutinying soldiers, was appointed one of the chief of the insurgents, and he marched with them to Constantinople. 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. Mauritius, 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 Khosru II. to announce Eastern empire broke out which the emperor, when he had learned the circumstances, took up arms to avenge the cause of Mauritius, 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 exalts 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 slaves. The letter in which Gregory to Phocas and his wife Leontia have been much censured, 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 in that country, and such acts of cruelty were to their flock were to eminent danger from the Longobards, it was their interest to propagate 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 was 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, but the tranquility of the East was restored; the Emperor Phocas only served to exasperate. Heraclius, 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 great defeat to the enemy, after some resistance. Phocas was taken and put to a cruel death by order of the younger Heraclius, who succeeded him in the empire, A.D. 610. (Cicero, Brutus, p. 331, &c.; Gibbon.)

PHOENIC ACID and PHOENICIN. This last is a peculiar fatty matter contained in the oil of the pomegranate, combined with olein and a very small quantity of phoenciacid. To procure it, nine parts of the oil are to be treated with ten parts of water, heated slowly for some hours, till when it has become cold and clear, is to be submitted to distillation, by which an acid of an olaginous appearance is obtained: if the acid is separated by carbonate of mag-
PHOCIA.

nessia, and the remaining oil treated with cold weak alcohol, the phocinon is dissolved by it, and it has the following properties:—At 25° its sp. gr. is 0.934; it exhalés a weak peculiar odor, and remains strong liquid below 32°, and boils at about 218°. It may be distilled in vacuo without alteration; but when distilled in a retort containing air, it is considerably altered, unless distilled with water, and then it cannot be separated from the water in the receiver. It is nearly as combustible as volatile oils.

According to Chevreul, it is composed of—

<table>
<thead>
<tr>
<th>Substance</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrogen</td>
<td>8.25</td>
</tr>
<tr>
<td>Carbon</td>
<td>65</td>
</tr>
<tr>
<td>Oxygen</td>
<td>34.75</td>
</tr>
</tbody>
</table>

PHOCIAN WAR. [Philippus (of Macedonia); PHOCES.]

PHOCION (θοκίων), an Athenian general and statesman, 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. For twenty-four 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 Phocion was the son of a turner, but he displayed great talent for account of the greatness of his education and the liberal views of his mind. Whatever was his rank, Phocion found admission into the school of Plato, and afterwards studied under Xenocrates, whom lessons had perhaps greater influence on his character than even those of Plato. From his associations, and the resemblance between Phocion and Xenocrates, while it would be hard to acknowledge any between Phocion and Plato. To a stern and forbidding aspect, a stoical demesmeur, and habits of rigid simplicity, Phocion 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 Demos- thenes 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 set for them in the time of Demosthenes, and there is much political wisdom in them; but still they have an air of intended wit and a striving after effect which make them look different from the strong and pungent sayings of Phocion's opponents. But after all, when biographer and subject each lived in an age more distinguished for simplicity than for policy, we need not hold these speeches inconsistent with that high character for wisdom which Phocion bears.

The public incidents recorded of Phocion'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 aside the part of an ambassador better than a general. His death (B.C. 317) took place under circumstances which much like those which accompanied that of Socrates. During the confusion which ensued after the death of Alexander, a revolution occurred at Athens, and the democratic party, drunk with success, condemned their chief opponents to death. Among these was Phocion: he died 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; repentance however does not usually stone for political crimes, and the parallel between Phocion and Socrates holds good with regard to the evil times which followed their respective executions, showing public ingratitude to be the same as well as the child of evil corruption.

(Plutarch's Life of Phocion; Thirlwall's Hist. of Greece.)

PHOCIS (φακίων) was bounded on the south by the Corinthian Gulf, on the west by Doris and the Locri Oceanica, on the north by the river Calius, and on the east by Boiotia. The territory of Phocis originally extended to the Euboean channel, but was in later times entirely separated from the sea by Locris. Strabo says (ix., p. 416) that Phocis was divided into two parts by the range of mountains between Paros, the western and Larissa, the eastern direction through Phocis till it joins Mount Helicon on the borders of Boiotia. Paros and the mountains which separate Phocis from Larissa form the upper valley of the river Ceعيش, on the banks of which there is some fertile country, though in many parts the mountains are too steep for tillage. The southern part of Phocis is almost entirely covered with the mountains which branch off from the south from the huge mass of Parosini, though the southern part of the mountainous range is too far both banks of the river. The southern part of Phocis is almost entirely covered with the mountains which branch off from the south of the huge mass of Parosini, though the southern part of the mountainous range is too far away for practical settlement. Of the twenty-five peaks of the range, of which the highest is the celebrated Crisman plain.

We know very little respecting the early inhabitants of Phocis. According to Pausanias (ii. 4. § 3; x. 1. § 1) the people derived their name from Phocias, whose name is of considerable antiquity is evident from the Phocians being mentioned by Homer (H. ii. 517). Previous to the Persian invasion they appear to have been frequently engaged in hostilities with the Thessalians, and to have been successful in maintaining their independence. (Herod. viii. 27. 28.) Xerxes, at the instigation of the Thessalians, ravaged Phocis with fire and sword, and destroyed many of their cities. (Herod. viii. 32.)

The political importance of Phocis was a matter of political interest till after the battle of Leuctra; but shortly after that event, circumstances occurred which occasioned the celebrated Phocian or Sacred War, in which all the great states of Greece were involved. This war lasted three or less occasions, and it ended in the peace of Apamea, in which a war is said by Diodorus (xiv. 23) to have been an act of sacrilege committed by the Phocians in cultivating a part of the Crisman plain, which had been doomed by a decree of the Amphictyons, in a c. 350, to be wasted forever. But whatever may have been the motive or the origin of this war, the fact of the war being the animosity between Thebes and Phocis, which had long prevailed under a show of peace. The Thebans used their influence in the Amphictyonic council to induce the Amphictyons to send a decree to Phocis that if a heavy fine to the god for the violation of the sacred land; and on their refusing to pay this fine, the council passed a decree that if the fine were not paid, the Phocians should be declared a terror to their territory to the gods, which decree was in all probability intended to reduce the Phocians to the condition of the Helots in Laconia, subject to the jurisdiction of the temple of Delphi. In these alarming circumstances the Phocians were induced by Philip to make alliances with Persia to appear to have held some high office in the Phocian state, and was a man of great talent and energy, to make the bold attempt at seizing the city and temple of Delphi. This attempt was successful, and the Phocians obtained in the treasures de-

The principal towns of Phocis were Delphi (Delphi) and Elata, of which the latter was situated on a small hill above the plain watered by the Cephissus. It was taken and burnt by the army of Xerxes (B.C. 480), and rebuilt about the year 477, and became from its position the most important town in Phocis. It commanded the chief road which led from the north of Greece to Bucebas and Attica (Strab., ix. 6. 23), and hence by the Phocians to Athens (Dioscor.), and hence by the Phocians to Athens (Dioscor., p. 238) that the greatest alarm prevailed at Athens when
On the sea coast the first town we come to after leaving the Locri Ozolian is Cirrha, situated at the head of the Crisanian Gulf (Bay of Salome) and at the mouth of the Pleistus. Cirrha was the port of Delphi, from which it was distant 60 stadia according to Pausanias (x. 37, § 4), and 80 stadia according to Strabo (x. p. 418). This town is frequently confounded with Corope, which is mentioned as a separate place by Strabo, and said to have been situated between Delphi and Cirrha. The Cirrhanes were charged by the Delphians with undue exactions from the strangers who came to consult the Delphian oracle. The Amphictyons declared war against them, which, after lasting for ten years, ended in the destruction of Cirrha, b.c. 585, the land of which was dedicated to the god. (Paus. x. 37, § 4.) The next town to Cirrha on the coast was Anticyra, celebrated for its preparation of helichore, which grew in the mountains above the town. (Strab. x. p. 418; Paus. x. 36, § 3.) Next to Anticyra was Medeon, destroyed with the other Phociam towns after the termination of the Sacred War and never restored (Paus. x. 36, § 3); and after it the small town of Marathus (Strab. x. p. 423), beyond which was the Pharygian promontory with a station for ships. The most easterly town in Phocis on the coast was Mycillus. (Strab. vi. p. 423.)

There are few towns of any importance inland, with the exception of Delphi and Eutalea. North-east of Delphi was Lyceum, a place of great antiquity. It is said in the Parnassian Marble to have been the residence of Deucalion, and Strabo (ix. 418) speaks of it as more ancient than Delphi. (Compare Paus. x. 32, § 6.) Above Lyceum was Tithorea or Neon, at the distance of 80 stadia from Delphi. (Paus. x. 32, § 6.) Its ruins are near the modern village of Vlitzia. 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 Lilies, which is mentioned by Homer (II. ii. 533) as near the sources of the Cephissus. It was distant from Delphi 160 stadia across the Parnassus. (Paus. x. 33, § 1.) On the borders of Boetia was the town of Amybus or Amybus (Paus. x. 36, § 2; Strabo, iv. 423), which is not unfrequently mentioned in history. In the Macedonian war it was taken by Flamininus. (Lit. xix. 18.) Its ruins were discovered by Chandler near the modern village of Dysconto.

Phocylides, of Miletus, was a philosopher and poet, and flourished about a.c. 555. An admonitory poem (tagma suvivare) 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 "Bibliothece Graeca" of Fabricius. There are several 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 poem.

Phoenician, Phoenicians (Φωινίκης, Φωινίκες). Pho-
nice proper, even in its most flourishing state, was a very small country. It extended along the eastern coast of the Mediterranean from the town of Tyre to the ancient city of Carthage. (Strab. xvi. p. 738.) Mount Libanus supplied them with abundance of timber for ship-building, and the useful metals were obtained in the iron and copper mines near Serapecte. In the east they met the Asiatic and Egyptian influences, and on the north coast of Africa, in Spain, 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. (CASTELO. By their
alliance with the Jewish state in the time of Solomon, they were in the north of Arabia, where they obtained the produce of India. (2 Chron., viii. 17, 18; 1 Kings, ix. 27, 28.) Herodotus says that they circumva-

gigated Africa, but there appears considerable reason for doubting the truth of this account. [AFRICA, vol. i. p. 172.]

It is possible that the Phoenicians, and the 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 that they planted colonies in the Americas, and the Priors early times. The Tyrians supplied Solomon with all kinds of artisans to assist in the building of the temple at Jerusalem (4 Chron., ii.), and the workmanship of the arti-

The Phoenician cities appear to have been originally in-

dependent of one another, and to have possessed for the most part a monarchical form of government. The old citi-

tes of these cities was Sidon (Gen. x. 16), but Tyre became in later times the most important, and probably exercised some degree of authority over the other cities. After the conquests of Alexander the Great, they were subject successively to the Assyrians, Babylonians, and Per-

sian monarchies. In the wars between the Persians and

the Phoenicians, the Phoenicians formed the chief and most efficient part of the Persian navy. They afterwards part of the dominions of the Seleucidæ, and were eventually in-

cluded 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 no remembrance of the language we could have little doubt that such was the case; but Ge-

sienius has satisfactorily shown, from numerous coins and inscriptions, the intimate connection between the Pheni-


cian languages of these states of the Phoenician 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 Jn. vii. 19) the Phoenician language as allied to the Hebrew, and he says the same of the Punic, which how-

ever, 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, in Africa, about the commencement of the Christian era. (Augustin, Adversus Haereses, iii. 16.)

There is no evidence that the Phoenician alphabet was invented by the Phoenicians, as is sometimes asserted by some writers; the Phoenician language, the most celebrated is the history of the Phoenicians and Egyptians, in nine books, by Sanchoniathon, of which a Greek translation was made by Philo Byllus in the first half of the second cen-

tury of the Christian era. (SANCHONIATHON.)

PHENICIA. [Phenicia.] PHENICIRCUS. [Piprinus.] PHENICOPHAINUS. [Phenicopterus.] PHENICOPHA'TUS. The name is known for a genus of birds founded on the Malakos, or Malakos. Levantian appears to have been the first who proposed a separation of the form from the Cockshoos, and Mr. Swainson, who in 1823,

announced the Phoenicophilus, or Horn-Bill Cockshoos, observes that the passage from the Tucans to the Cockshoos seems to be marked by such genera as Phoenicophilus or Saurothera, where the bill, as in the first, is either much longer and thicker than in the gener-

ality of Cockshoos, and is more extended in shape to that of the Tucan, or as in Saurothera, where the edges be-

come dentated. The Generic Character, as restricted by Mr. Swainson, will be found in the article Ibis. [Ibis.] Example, Phoenicophilus Pyrrhocephalus. This appears to be the Cuculus Pyrrhocephalus of Forster and the Phoenicophilus leucogaster, Desm. In a recent meeting of the Zoological Society of London he described a bird of this genus, Phoenicophilus Cummingi, belonging to Mr. Swainson's subdivision Dasylophilus, forwarded by Hugh

Cuming, Esq., a corresponding member from Luzon. Mr. Forsyth pointed out that the feathers of the crest of this bird are distinguished from all the known members of the 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 whale-

bone; and in this respect they resemble the feather of the Toucan, to which Mr. Gould, in his monograph, applies the name Pteroglossus uloucomus, which is the Ph. Bea-

harnieri of Wagler, but are not curled as in that species. The feathers also differ from the needles of the crest and chin, and along the middle of the throat, are grey at the base, have a decided white spot towards the middle, and are termin-

ated by a broad expansion of the shaft, which is of a dusky black colour, with blue or greenish reflection. The external edge of this expanded portion of the shaft is minutely pectinated. The occipit 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-covers are dusky brown tinged with green; the bill is horn-colour; the feet olive. Accord-

ing to that indefatigable collector Mr. Cuming, this beautiful and interesting bird is named Anisim En Bicol in the Alby tongue. The eyes were red, and the pupil large and black. The length from the tip of the tail to the bill measurement round the body five inches. Total length sixteen inches. (Fraser.) (Zool. Proc., 1839.) In the same volume another species, from Malay, Phoenicophilus virdirosus is described by Mr. Eton—native name, see Loheit. The synonyms given are Pittaclis Malacensis, Kubl—

native name, Tana; Bucco trimucula, Gay—native name, Tandu; and Bucco versicolor, Raff—native name, Tahooor. Phoenicophilus tricolor, Seepl.—native name, Kada bar; Chlorocochclus (Saccus chlorocephalus, Raffles—

native name, see Loheit; Creafurdi, Gay—native name, Kada Kuchis; and Javaucus, Horn—native name, Kada Apé; are also referred to by Mr. Eton as synonyms of Aniso-

En Bicol, modishly described by Mr. Cuming.

In Mr. G. R. Gray's arrangement the Phasianinae consist of the genera Phasianus, Vieill.; Carpoecypsy, G. R. Gray; Rhinorhina, Vig.; and Tococeus, Less.; and the six subfamilies of the Cuculidae are Indicatorinae, Sau-

rotherinae, Centropinae, Phasianinae, Coccyginae, and Cucoinae.

PHENICOPHETERINAE. Mr. Swainson's name for his first subfamily of the Anisiden, consisting of the genus Phasianus. In this position is given to the Phasianinae by Mr. G. R. Gray.

PHENICOPHETERUS. [Flamigo.] PHENICORNIIS, Mr. Swainson's name for a genus of Cuculidae, Celeroperis, Sharp. [Sharp.] PHENICORUS. Mr. Swainson's name for the Red-

starts. [Sylviidae.] PHENISSOMA. Mr. Swainson's name for a genus of Prunilaeidae, and placed by him in the subfamily Tun-

grinae. [Prunillidae; Trogirinae.] PHENIX (φεῖνως), one of the most renowned of the fabulous monsters of antiquity, defined by the Arabsians to be malibimo 'lismo, magnum l'ismo ('a creature') whose name is known, its body unknown.' (Richardson's Arabic and Persian Dict.) It is supposed by some persons to be mentioned in the Bible, Job, xxix. 18, and Psalms, xxxii. 12. In the former passage κιανιωτις is translated in our version 'as the sand,' but by Bede, 'Sicut Phinis' in the other. Κιανιωτις, which is rendered in our version 'like the palm tree,' is explained to mean the phynix by Tertullian (De Resurrec. Carnes, sec. 172). On the other hand, the sacred bird, the name of which is the phynix; I have not myself seen it except in a picture, for it seldom visits them, only (as the people of Heliopolis say) every five hundred
...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 far the most part very like to the eagle in outline and bulk. And this bird, they say, descends from bees, born beyond bees; and, having escaped out from Arabia, he brings his sire to the temple of the sun; that 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 as large as bees can bear; and, afterwards tries 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 myrrh that part of the egg where he had made the hole. And myrrh lies in a weight of [450] the same as [that it was before it 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 believed for more than a thousand years. It would be tedious and useless to quote the words of each author who forms a link in the chain; it will be sufficient to mention that, between the times of Herodotus and Tacitus, the fable of the 'Phenix' is told more or less fully and circumstantially by the following classical writers: Antiphanes (poet.). Athen. Deipn. vi. 527, ed. Recom. (text). Chili, v. 393), Luran (Phars. lib. vi. v. 680), Martial (Epigr. v. 7), Mela (De Situ Orb. lib. iii. 84), Ovid (Metam. lib. xiv. 391), Amor (lib. ii. 6), Pliny (Hist. Nat. lib. 2)., 184, ed. t., Statius (Silv. lib. ii. 4, 36; lib. ii. 3, 214). The passage in which Tacitus notices the Phenix is very remarkable, and deserves to be quoted at length as being the most authentic account of it that has been preserved and also as showing that so cautious and accurate a man as he always considered to be entertained no kind of doubt as to its real existence and its periodical appearance in Egypt. 'Tacitus (in his 'Germania', p. 51) says he (in Murphy's translation, Annul. lib. vii. cap. 28) A.D. 787, 34. 'the miraculous bird, known to the world by the name of the phenix, after disappearing for a series of ages, revisited Egypt. A phenomenon so very extraordinary could not fail to produce abundance of curious speculation. The learning of Egypt was displayed, and Greece exhausted her ingenuity. The facts, about which there seems to be a concurrence of opinions, were from this time in a manner doubted: but, as worthy of notice, will not be unwelcome to the reader. That the Phenix is sacred to the sun, and differs from the rest of the feathered species in the form of its head and tail, and its power of being reared by the progeny of its relatives. Of its longevity the accounts are various. The common persuasion is that it lives five hundred years [Herodotus, Ovid, Seneca, and Mela, &c.]. Phliusius (in Vit. Apion. Tyan. iii. 49, ed. v. p. 124. #Arian (Hist. Animal. lib. vi. p. 89). Aurelius Victor (De Caesar. cap. 4, sec. 12; Epit. cap. 4, sec. 10). Horapollo (in Hieroglyf. No. 34, p. 41). St. Clement of Rome gives a different account, and in the period when Ptolemy, the third of the Macedonian race, was seated on the throne of Egypt, another Phenix directed its flight towards Heliopolis, attended by a group of various birds, all vert, 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 involved in the realm of pure conjecture. The intermediate space is not quite two hundred and fifty years. From that circumstance it has been inferred by many that the last Phenix was neither of the genuine kind nor enclosed within the bounds of Arabia. The instinctive qualities of the species were not observed to direct its motions. It is the genius, we are told, of the true Phenix, 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 nest care is taken by the female; the male, having trust to its wings, is to perform the obsequies of his father; But this duty is not undertaken rashly. He collects a quantity of myrrh, and try to strength, makes frequent excursions with a load on his back. When he has made his experiment through a long tract of air, and gains sufficient confidence in his own vigour, he takes up the body of his father, The phylosophers, and his nest; and flies with it to the altar of the sun, where he leaves it to be consumed in flames of fragrance. Such, at least, is the narrative of Tacitus (De Situ Orb. lib. vi. 382); and he has, no doubt, a mixture of fable; but that the Phenix, from time to time, appears in Egypt, seems to be a fact sufficiently ascertained. After the time of Tacitus the fable of the Phenix is repeated or alluded to by the following classical authors, besides those already referred to:—Achilles Tatius (De Leue. et Citt. lib. iii. cap. 25, p. 157, ed. Merti.) Aristides (Orat. tom. ii. p. 107, ed. Jobb. et ibi Scho- liei). Artemidorus (Onorotis, lib. iv. p. 228, ed. Rigalt). Ausonius (Edyldil, v. 16, p. 555, and Edydl, 11. 16, p. 543, ed. Toll). Claudian (Eddyld, 1, 2). 'De Phenix (in Prim. Consul. Stithia, lib. ii. p. 414, sq.), Epict. (ad Ep. Mont. lib. iv. 153, ed. Rom. lib. 58, cap. 27). Diogenes Laertius (De Vit. Philo- sopher, lib. ix., cap. 11, sec. 9, and 79). Lampridius (in Heliogab. cap. 23). Lucian (Hermot. cap. 53. Nanp. cap. 44). De Mortis Peregrin. cap. 27). Opius (De Aviolog. p. 45, p. 426. ed. Torn., cap. 270). Solinus (Phys. lib. xii. 305). And Solinus (Physiast. xxxii. 11). Of these passages perhaps the only one curious enough to be particularly noticed is that in Lampridius, who tells us that Heliogabulus promised his guest a Phenix for supper: but he was however obliged to content him with a dish of the tongues of phoenicopters (or flamingos). But it is not only in heathen authors that this fable is to be found; it is also to be found in various Vitruvian, Plinyan, and Rabbinical writers, and by the early fathers of the Christian church. Ezekiel, the Jewish tragic writer [vol. xi. p. 335, col. b], describes the Phenix in his 'Exagoge (ap. Euseb., Prepar. Evang. lib. i., cap. 29, p. 246, ed. Colon., 1688). And Kimchi informs us (ap. Harkon, Her. vo. lib., vi. p. 5, p. 818) that in the passage of Job quoted above some of the Rabbin read the Phenix instead of the sun. The very words of several of these writers may be given:—'The Phenix, of a hundred and sixty years, is the only animal that did not eat of the forbidden fruit in Paradise. A somewhat similar bird seems to have been known to the Arabsians under the name of Anta. Mr. Lane, in the 'Introduction to the Notes on the Names of a Thousand and One Nights' (ch. 20, note 22), tells us on the authority of Kaswini, that the anta is the greatest of birds; that it carries off the elephant; as the kite carries off the mouse; that, in consequence of its carrying off a bride, God, at the prayer of a prophet named Handalbah, banished it to an island in the circumambient ocean, unvisited by men, under the equinoctial line; that it lives one thousand and seven hundred years; and when the young anta has grown up, if it is not destroyed by the new Phenix, it burns herself; and if a male, the old bird does so. Many of the early fathers believed the story so firmly that they did not hesitate to bring it forward as a proof of the resurrection; and, that, not as an argumentation ad hominem, when disputing with heathen writers, but as an argument ad hominem, when addressing to converts to Christianity. St. Clement is the first who uses this argument (loco cit.), in which he is followed by St. Cyril and Tertullian (loco cit.), and Euseb. (Pr. ant. p. 160). The passage in St. Cyril (which also contains two or three additional embellishments) will serve as a specimen. 'God knew men's unbelief,' says he (in Mr. Church's translation, Oxford, 1838), and provided for this purpose, that he should cause the Phenix to return and live; the same is true of the Clement, and as many more relate, the only one of its race, going to the land of the Egyptians at revolutions of five hundred years, shows forth the resurrection; and, this, not in desert places, but the mystery which comes to pass
should remain unknown, but in a notable city, that men might even handle what they disbelieve. For it makes itself a nest of frankincense and myrrh and other spices; and entering into this when its years are fulfilled, it evi-
dently causes a sheaf of com to be raised of the most exquis-
t flesh of the dead a worm springs, and this worm, when grown large, is transformed into a bird; and do not dis-
believe this, for thou seeest the offspring of bees also fashioned thus out of worms, and from eggs which are most moist thou readest in the news of birds this issue. Afterwards this phoenix, becoming fledged and a perfect phœnix, as was the former one, soars up into the air such as it had died, showing forth to men a most evident revivification. That this is the only one of this spe-
cious bird, yet is irrational, nor sings psalms to God; it flies abroad through the sky, but it knows not the only-
be-gotten Son of God. Is then a resurrection from the dead given into this irrational creature, which knows not its
maker; and to us, who ascribe grace to God and keep His commandments, shall there no resurrection be granted?
The story is also mentioned at greater or less length by
Alcimus Avitus (De Orig. Anim. i. 4, sec. 3), St. Ambrose (Haerem, lib. v., cap. 25; In Psalm xxvi, vi., 9), St. Augustin (De Nat. et Orig. Anim. tom. viii., lib. iv., col. 1203; Serm. 18, tom. x., col. 1308), Epiphanius (Phystol.,
tom. ii., p. 203), Eusebius (De Vida Constant., lib. iv.,
cap. 72), Isidorus Hispalensis (Orig., lib. xxv., cap. 37), Lactantius (Carmin. de Phœnico), St. Gregory of Nazianzen (Orat. 37, p. 598), and Rufinus (in Symb. Exposi., p. 548). Origen
seems to doubt its truth (Cont. Cels., lib. iv., cap. 98, p. 229), and Photius blames Clement for the insufficiency in men-
tioning it (Bibl. cod. 126, p. 305); but these two are (as far as the writer is aware) the only two of the antient authors who do not believe it. This however ought not to lessen the authority of the fathers on other matters, nor should it be made a subject of reproach against them that they were not proficients in a branch of knowledge which has been a peculiar study of modern times. (See Mr. New-
man's preface to Mr. Church's Translation of St. Cyril, Oxf., 1832.)

It would be almost impossible to enumerate all the more
modern authors who, during the middle ages, expressed their
belief in the existence of the Phoenix, for the list would include almost a whole work on natural history, besides a great num-
er of others. Perhaps the most curious circumstance relating
to it is what is told us by Camden (Britannia, p. 783, ed.
London, 1607), viz. that Pope Clement VIII sent in, 1599, to
Lord Tyrone, the chiefman of the Irish rebels, a Phoenix's feather. This was mentioned in his diary eight days after the event took place, but we are not informed how the Pope procured the feather, or what had become of it at the time when Camden wrote.*

Patricius Jhanus (Patricius Johanus, a native of Strasburg, who published in 1639, argues in favour of the existence of the Phoenix, and says, "Malus cum Clemente, Tertulliano, Origenes, &c., errare, quam Maximum" (i.e. Max. Mart. Lib. ad Petrum cent. Secundi Dogmata) "et spectat optimam sequi." Sir Thomas Browne, in his "Vulgar Errors," (of which the first edition was published in 1646), thinks it necessary to state at some length his reasons for disbelieving the existence of the Phoenix (book iii., ch. 12); and in 1553 he was attacked for this and other pieces of incredulity by Alexander Ross, in a work entitled "Arcana Microcosmi," or, "The Hill Secrets of Man's Body discovered," &c. With respect to the Phoenix, the writer is not surprised at its seldom making its appearance, seeing that the whole life of the bird is only eight years. For even in the north, where the height of the sun was 133 degrees, it was not seen. No doubt the species to which 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, was the palmus, that has been introduced into the south of Europe, and cultivated in a few places, not only for its fruit, but on account of its leaves, which are sold twice a 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 ancients, as it is considered that the bunches of dates were likened to the fingers of the hand, as appears from the present specific name, daectylifer, from the Greek daectylus, a finger. It is the tree of the desert—"the palm-tree of St. John," as it is termed by the Talmud, as we see in coins, and the inscription of Judas capta. It is found in oases in the desert, and round Palmyra, which is supposed to have been named from this appearance. It indeed looks better than any other crown. It is a

PHOENIX. 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 Phœnicia, 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; coroll 3-petalled; stamens 6 or 3; filaments very short, almost wanting; anthers linear; (female) calyx urceolate, 3-toothed; corolla 3-petalled, with the petals con-
volute; pistil with three oварies, distinct from each other, but one on each side, which is more or less united; drupe single; seeds marked on one side with a longitudinal fur-
row; albumen reticulate; embryo in the back of the seed;
palms with branches of a moderate height and ringed, or marked with the scars of the fallen leaves; fronds or leaves pinnate; pinnae or leaflets linear, with the spadix burrowing among the leaves, surrounded with an almost woody two-
 edged sheath; flowers yellowish-white; fruit soft, edible, of a reddish yellow colour.

Phoenix dacty]lifera, or the date-tree, is one of the best
known and probably the earliest known of the palms, and
together belonging to a family which abounds and flourishes most in tropical regions, itself attains perfe-
cion only in those countries which have the requisite climates. It is not

* It must be the follow to the letter that Hooker saw in the Secundal, and which was said to come from the wing of the Archangel Gabriel. He describes it: Letters from Spens, let. 13 to 45 are most clear on the subject of phoenix ever be

* The writer wishes it to be recorded for the information of posterity, that after writing the above sentence, he has found at Oxford a very leaved scholar who, at this very time (June, 1840), seriously believes in the existence of the phoenix.
supposed to be a corruption of Tamar (from tamar, a date), a city built in the desert by Solomon. The date-tree is therefore a subject of classical as well as of scriptural interest, besides its fruit forming a large portion of the food of the Arab race, and also a considerable article of commerce.

The date-palm being diacritic, that is, the stem and pistile, or the male and female parts being not only in different flowers, but on different plants, the fruit is either male, or female, or both, and therefore the date-tree is one of those which led to a knowledge of the sexes of plants.

The extensive importance of the date-tree is, says Dr. Clarke, one of the most curious subjects to which a traveller can direct his attention. A considerable part of the inhabitants of Egypt, Arabia, and Persia subsist almost entirely on its fruit. They make a conserve of it with sugar, and even grind the hard stones in their hand-mills for their camels. In Barbary they form handsome beads for pectoral ornaments of these stones. From the leaves they make couches, baskets, bags, mats, brushes, and fly-traps; the trunk is split and used in small buildings, also for fences to garden plots, of the leaf, and for making cages for poultry. The threads of the web-like integument at the bases of the leaves are twisted into ropes, which are employed in rigging small vessels. The sap is obtained by cutting off the head of the palm and scooping out a hollow in the trunk, into which it lodges itself. Three or four quarts of sap may be obtained daily from a single palm, for ten days or a fortnight, after which the quantity lessens, until, at the end of six weeks or two months, the stem is exhausted, and the trunk becomes firm and hard. This liquor is sweetish when first collected, and may be drunk as a mild beverage, but fermentation soon takes place, and a spirit is produced, which is distilled, and forms one of the beverage of the negro of the back, or spirit of Eastern countries. Such being the importance and multiplicity used of the date-tree, it is not surprising that in an arid and barren country it should form so prominent a subject of allusion and description in the works of Arab writers, and that it should be said to have 300 names in their language. Many of these are however applied to different parts of the plant, as well as to these at different ages.

Phantax sylvestris is a species common in the arid parts of India, and there commonly called hajjuor by the natives, and the date-tree by Europeans, which it resembles in appearance. In its parts of fructification it is like the following species, but differs in growing to be a tree, with a tall stem, and having large, grey leaves. It yields tarri, or palm wine, commonly called toddy. The mode of obtaining this is by removing the lower leaves and their sheaths, and cutting a notch into the centre of the tree through which the liquid is conducted by a small channel, made by a bit of the palm-tree leaf, into a pot suspended to receive it. This juice is either drunk fresh from the tree, or boiled down into sugar, or fermented for distillation, when it gives a large portion of spirit, often called paria arreab. Mats and baskets are made of the leaves.

Sugar has always been made from this species, and accounts of it have been given by Drs. Roxburgh and Buddle. Sugar is not so much esteemed in India as that of the cane, and sells for about one-fourth less. It has been imported in considerable quantities into this country of late, but is not distinguished from the cane sugar above mentioned. Dates of about 100,000lbs. were made annually in all Bengal. At the age of seven or ten years, when the trunk of the tree is about four feet high, it begins to yield juice, and continues productive for twenty-five years. The juice is extracted during the months of November, December, January, and February, during which period each tree is reckoned to yield from 120 to 240 pints of juice, averaging 180 pints. Every twelve pounds of pulp is boiled down to one of goor or jaggery, and four of goor yield one of good sugar in powder, so that the average produce of each tree is about seven or eight pounds of sugar annually.

F. jurtnera is a dwarf species of this genus, which is a native of the sandy hills, not far from the sea on the Comorandal coast. It flowers in January and February, and the fruit ripens 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 six in diameter, and it increases in its proportions 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 till the farinaceous part is detached from the fiber, and then it is then sifted, to separate them: the meal is then fit for use. The only further preparation which this meal undergoes is the boiling it in a thick gravel, or canji. It seems to be possessed by the natives in large quantities, it is obtained in a similar manner from another palm, and is less palatable when boiled, but it has saved many lives in times of scarcity.

PHOLADARIA. [Trochilidæa.]

PHOLADA RIA. Lamark's name for a family belonging to the division of Dimagurian Conchoeria, which he has termed Crassipèdes, and consisting of the genera Pholos and Gallactosæna; but M. Deshayes, in the last edition of the Animaux sans Vertébres, remarks that this family can no longer remain in the same state as that which Lamark as signed to it. The Gallactosæna, he observes, are, as he had already stated, true Pitulane, and if either of the genera Gallactosæna or Pholos remains, the other must disappear. [Gallactosæna.] He suggests that the genus Pholos alone should remain, unless the evident relations which connect it with Teredo and Teredin should render it necessary to unite all three genera into one natural family.

PHOLALIDEA. [Pholos, p. 109.]

PHOLADOM'YIA. 'Qu'est-ce que le genre Pholadomyia de quelques auteurs Anglais? C'est ce que nous ignorons; il paraît qu'il est établi avec une coquille cubiforme, très-large et très-brillante en avant.' We shall endeavour to answer the question thus put by M. de Blainville in his 'Malacologie.'

The genus Pholadomyia is a most interesting form, for the knowledge of which we are indebted to Mr. G. B. Sowerby, who described from a recent species brought from the island of Tortola by Mr. Nicholson, in the possession of Mrs. Mawe, from which 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 fossils, whose genus, as Mr. Sowerby observes, in his Genera (No. XLI.), was before exceedingly doubtful, insomuch 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 Conchology for the result of his investigations. Several of the species are figured under the names Carida? producta, obtusa, lyrata, deltoidea, and margaritacea; and Lutaria lyrata, ovula, ambigua, and angustula. These species occur in all the conchological series, particularly the cornbrash, inferior oolite, and fullers earth; as well as in the lias, the London clay, and the Sutherland coal-field; also in the dark-coloured clay at Alum Bay.

Generic Character.—Shell very thin, rather byline, transverse, venusico; 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 mar tial lamina in each 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.)

The same zoologist remarks that this shell is the only instance known to him in which the umbones are so approximated as to be worn through by the natural action of the animal in opening and closing its valves. He further ob serves that the general aspect of the shell is that of Pholos and Acanthina of Lamark, but most of the fossil species have been arranged as Lutaria. 'We have called it,' says Mr. G. B. Sowerby, 'Pholadomyia with reference to its resemblance to shells in its aspect to a large family, Pholades and Myea. It is related to Panopea in the character of the hinge, but may be distinguished from that genus by its thin, semitransparent, pearly shell; from Pholas and Acanthina, by its external ligament, and its want of external and internal accessory valves; and lastly, from the La-
merekian *Myas*, by not having the unequal teeth of that genus."

M. Deshayes, with his usual acuteness, saw at once the value of Mr. G. B. Sowerby's characters, and incorporated the genus *Pholadomya* in the new edition of Lamarck's *Animalia Nova Veritères*, placing the form between *Soleaetus* of De Blainville and *Pamatena*.

But since the publication of the observations of the zoologists above given, Mr. Samuel Stutchbury has favoured us with a sight of the animal of the only recent species known—that on which Mr. G. B. Sowerby founded his generic description of the shell. This valuable specimen is now in the hands of Professor Owen, to whom we are indebted for the following description:

**Animal of Pholadomya.** *Pholadomya* presents all the family characters of the *Inclusa* or *Ensermes*, but differs generically from all those, the organization of which has hitherto been described, by the presence of a fourth aperture leading to the interior of the mantle, that is to say, besides the linear slit for the protrusion of the narrow foot at the anterior part of the ventral aspect of the mantle and the two siphonic tubular passages, there is, at the under or ventral part of the base of the united siphons, a small round aperture, which is continued upon a truncated pyramidal papilla projecting into the pallial cavity, forming a valvular obstruction to the exit of fluids, but admitting their entry. This doubtless relates to some curious and peculiar feature in the economy of the mollusk: the foot is compressed, $\frac{1}{2}$ inch long, $\frac{3}{4}$ lines broad; the siphonic tube $2$ inches long, $\frac{1}{2}$ inch in diameter, bifid at the extremity; the labial appendages short; the two *branchiae* of each side conjoined, and those of the right united to those of the left side along their posterior fourth. More of the anatomy I have not at present worked out; but there is enough, I think, here stated to serve as an answer to M. de Blainville's question.

Example. *Pholadomya candida* (G. B. Sowerby). **Description.**—Shell transversely oblong, very short posteriorly, rounded; median part marked with diversified, decussate stripe, which are recurrent from the umbos; anteriorly elongated, subquadrate. (G. B. S.)

**Locality.**—Marine, and, most probably, in deep water. The specimens from which Mr. Sowerby characterised the genus was thrown upon the beach at Torquay after a hurricane.

M. Deshayes, in his Tables, makes the number of living species one, and that of the fossil species (tertiary) the same. In the last edition of the *Animalia de Vivis*, from the records but three fossil species—*Pholadomya obtusa*, Sow.; *angulifera*, Desh.; and *prodacta*, Sow.; the first being *Cordula obtusa*, Min. Con.; the second *Mya angulifera*; and the third *M. prodacta*, Sow. *Pholadomya* and *Pholadomya* products of the same work. Our catalogues however contain numerous species. Thus we have, for example, *Pholadomya Murchisoni*, from the Inverbrora coal-ips and beds overlying coal upon the Moine (Murchison's *Natural History of Scotland*). In the same, *Pholadomya margaritacea*, from the areaceous limestone or sandstone of Bognor, and another marked with an asterisk, indicating that it was either not in the possession of the author or not examined by him, from the Shanklin sand (Mantell, *Tabular Arrangement of the Organic Remains of the County of Sussex*), *Geol. Trans.*. vol. iii., 2nd series; *Pholadomya decussata*, Murchisoni, *opales, producta*, *nana*, *deltoidea*, *simplex*, *obtusa*, *acutostata*, and *obiquata*, from the Speeton clay, cornbrash, Bath oolite, calcareous grit, Kelloway's rock, and Oxford clay, &c. (Philips, *Description of the Strata of the Yorkshire Coast*); *Pholadomya ambiguus*, genus, from the shelly ferrures, &c., and unnamed species from the inferior oolite, in the fuller's earth, and *prodacta* and *byruta* from the cornbrash (Lonsdale, *On the Oolitic District of Bath*), *Geol. Trans.*. vol. iii., 2nd series, and *Pholadomya deltoidea*, from the Oxford oolite, and other unnamed species from the gault and lower green-sand. (Fifton, *On the Strata below the Chalk*), *Geol. Trans.*, vol. iv., 2nd series.

PHOLOEBUS. De L'Isle's name for a part of the genus *Saxicava* of authors. [LITHOPHAGIA, vol. xiv., p. 50.]

PHOLARITE.—Hydrated Silicate of Alumina. This substance occurs in small pearly scales, which are usually convex. These are white, soft, and friable, and they adhere to the tongue.

This substance occurs in the department of Allier in France, in the coal formation of Fins.

PHOLAS, a name given by Linnæus to a genus of conchifers, placed by Lamarck in his family *Pholadaria*. [PHO.

**Generical Character.**—Animal more or less thick and elongated, rarely shortened; mantle reflected on the dorsal part, for the purpose of tying together the valves and the accessory pieces; anterior aperture rather small; foot short, oblong, and flattened; siphons often elongated and united into a single, solid, oblong tube; umbos small, with very small labial appendages; branchium elongated, narrow, slightly unequal on each side, united on the same line nearly throughout their length, and prolonged even into the siphon.

Shell delicate, milky white, rather transparent, covered sometimes with a thin epidermis, oval, elongated, inequilateral, gaping posteriorly, and especially at the antero-inferior part; umbones hidden by a callosity; hinge toothless, ligament double?; a flat, recurved, spoon-shaped process enlarged at its extremity, elevating itself within each valve below the umbo; muscular impressions very distant, the posterior one large, oblong, elongated, always very visible, the anterior one small, rounded, but little distinct, more or less approximated to the edge, particularly the anterior edge, of the shell, and joined by a pallial impression, which is long, narrow, and deeply excavated backwards.

Many accessory pieces or none? sometimes a calcareous tube enveloping all the parts, but leaving an aperture backwards. (Rang.)

M. Rang remarks that if the species which compose the genus *Pholus* were better known, they might be divided into many well characterised groups according to the number and disposition of the accessory pieces, which vary considerably; but unfortunately these accessory pieces are well known in a small number of species only. Besides, he observes, the genus is so imperfectly ascertained, although found in great abundance on the coasts of France, that naturalists are not yet agreed as to the number of mus.
trophocene, 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 several fossils from Mérignac, in which he completely recognised this important character, which more firmly establishes the generally admitted relationship between the Pholades and the Trochitine, and the former doubt that these shells are 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, on the contrary, speaks of 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 devoid of accessory valves; but in both forms the two valves of this latter, when closed, are nearly globular: the same characters distinguish Pholus from Xylotrya of Leach: *Xylo-
ophaga* of Turton, which has accessory valves, and which does not form a shelly tube, is however distinguished by the internal curved tooth, which is common to Pholus and several Tubuloids. (Genera, No. xxiii.) The same author (loc. cit.) remarks that he had endeavoured formerly to show that *Gastrocerca* belongs rather to the *Tubuloida* than to the *Pholadidae*; 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 *Petri-
cola*, *Veneriformes*, and other terebrating conchifera, which do not form a shelly tube open at one or both ends? He also inquires if the commonly called *Pholus 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 commences 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 genus, but are not sufficiently strong for separations. Mr. Sowerby admits indeed that some species (*Pho-
las clavata*, Lam., for instance) may, on account of their being closed at both ends, be distinguished genetically, because the distance implies the breadth of the animal which they are formed: this character therefore, he remarks, has been seized by Dr. Leach, and upon it the doctor founded his genus *Maritena*, an example,

**Pholas Dactylus** (animal and shell); the lower or ventral parts are presented to the spectator. a, mantle; b, foot; c, tube; d, shell.

Animas of a *Pholas* (anem—*Pholas clavata* Lam.) from Adamson—side view. a, tube; b, mantle; c, foot.

1. Accessory valves; a, anterior pair; b, central piece; c, posterior piece.
2. Exterior view of shell, side view.
3. Internal view of valves; a, Spoon-shaped process.

**Shell of Pholas Dactylus.**

1. Accessory valves; a, anterior pair; b, central piece; c, posterior piece.
2. Exterior view of shell, side view.
3. Internal view of valves; a, Spoon-shaped process.
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 Pholas from the collection formed by the zealous Hugh Cuming, chiefly on the western coast of South America and in the South Pacific Ocean, prefaces 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 description of the extraordinary difference in the form of the same species in different stages of growth. The addition of accessory valves, which are not infrequently observed, serves, in order to guard against too implicit a confidence 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—last 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, then the smallness of the shell of the young specimens of the Cypraea it 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 Bregmopleura, whose young there are last month from a young specimen of a state of two inches in length, and perfectly formed shells of the same species not more than half an inch long. For instance in demonstration, I need only refer to the Pholas pygmeus, 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 Pholas lamellosa. This varies in size exceedingly, so that it may be obtained both in an incomplete and young state, and in a fully grown condition, the length of the young specimen being about half an inch longer than the adult. 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 to persist, in regard- ing the young and old as two distinct species. 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. Progr. 1834.)

Before we proceed any further, it becomes necessary to notice the genus Jouannetta of M. Ch. de Moulins, which is thus characterised:—

Shell spherical, cuneiform, equivale, inequalitarian, hardly gaping posteriorly, though widely open anteriorly; valves solid, sharp, regularly articulate, pointed below, striated obliquely, the siphonal canal converging towards a median furrow; umbones but little distinct, with accessory pieces soldered over them; very large, smooth, delicate, fragile scutcheon enveloping, with age, all the anterior part, formed of two rather unequal valves, fitting (symbolian) one in the other, each soldered by one of their edges to one of the valves, and closing in this manner the anterior gap of the shell; no ligament nor hinge (engrenage); a setiform vertical appendage proceeding from the best safeguard of the shell. According to Mr. Cuming, they inhabit shallow water and occupying a third of its height; muscular impressions still unknown; palial 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 Pholas, its shell being both between these and the Tere- dines, to which it leads so naturally by its valves. Jouannetta, he observes, has no enveloping calcareous tube, as sometimes happens to the Pholas, &c.; and though only one species is named des Moulins and in consequence it is in the furrows of Ménétrier, in the interior of madreporae, &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.

M. Deshayes, in the last edition of the 'Animaux sans Vertebres,' does not think quite so highly of the genus Jouannetta, as we shall presently see. With regard to the accessory pieces of the Pholades, he considers that they are no other than vestiges of the complete tube of the Tere- dines; and this opinion, he observes, must rest upon 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 Tereelines being able to cover their small part of the animal, the defect is supplied by a great tube: on the contrary, in proportion as the shell of the Pholades is better closed, the number and size of the accessory pieces diminish. M. Des- hayes then goes on to observe that these pieces cover the ligament which is external; but M. Deshayes is convinced, both from the observations of Poli and his own, that the Pholades have no true ligament; and the same is the case with the Tereelines. A part of the anterior muscle is inserted on the cardinal calliostome, and occupies the place of the ligament. A posterior expansion of the mantle girdles between these calliostome, penetrates into the porous tissue placed below the calliostome, and forms externally a fleshy surface more or less great, on which the posterior pieces are fixed. With regard to the internal appen- dages springing from the umbones, and which have somewhat the form of little spoons, they are buried in the flesh of the animal, as a defense against the part of the liver, the heart, and the intestine. M. Deshayes dismisses the genera Xylophaga and Jouannetta very shortly: the first he rejects as useless, nor can he allow that the second has a true ligament. The union of the two genera so slightly characterised as these are were less adopted, there would be as good reason for making a par- ticular genus of each of the species of Pholas. Mr. Swainson makes the Pholades the first family of his tribe Microtranchia, as the characteristic of that family:—

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

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

1. Aspergilium; including the subgenera Aspergilium, Clavella, and Terechus.
2. Guatocinna (Gastrochus), Lam.
3. Pholadomya, Sow.
4. Pholadus, Linn., with the subgenera Pholadus, Linn., Pholades, Leach, Martensia, Leach, and Xylophaga, Sow., and
5. Tereida, Linn., with the subgenera Tereon, Linn., and Tereidina. (Malacology, 1840.)

Locality, Habits, Organization, &c. of the genus Pholadus.

The geographical distribution of the Pholades 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 teretating testacea, an object of anxious interest to those who construct submarine works. The Breakwater at Plymouth was soon attacked by the Pholades, and in Dr. Goodall's fine collection, now dispersed by the hammer, there was a specimen from the Breakwater perforated by these testacea. 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 are driven closely into the submerged part of the timber, as in the piles which support the pier at Scampston, near York. It is the safest safeguard of the timber. With regard to the young Pholades excave 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- inion seems to be that it is directed by the smell, which, coming from the seas, the currents of water produced by the vibratile cilia of the animal, as noticed by Mr. Garner, are the principal agents. (LITOPHAGIS: see also CLAVELLA and GASTROCHUSA.) M. des Moulins, according to Jouannetta, found by Mr. Cuming 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 lime, and, in forming the cavities in which it re-
ides, it has, by such chemical process as, in Mr. Sowerby's opinion, frequently takes place, absorbed a much greater quantity of the rock than could be retained or converted; this is 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. Proc., vol. ii.), remarks, that there is a cartilage between the two small spongy processes of the hinge in the Pholas candidus. In other species which have no rudiment of it, and allied genera which have a particular character of articulation, he 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 Bellew and Mr. Oken with regard to the crypts of Saccina will be found under our notice of that animal in the article LITHOPHAGIDAE [vol. xiv, p. 51]; and he follows them up by observing that Turton says the valves of the Teredo do not correspond with the bore, though Mr. Garner thinks that in this case they do act as mechanical instruments: but, he adds, the Pholas candida is often found in hard timber, though its valves do not seem in the least adapted for any boring or filing. See further on this point Mr. Garret's observations on the subject of a supposed solvent fluid in the description of Lithodoma. [MYTILIDE, vol. xvi., p. 49.] Mr. G. B. Sowerby had previously (Genera, No. xxiii.) remarked that the manner in which these and other perforating shells produce the cavities in which they live had long been subject to controversy, and observed 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 to the shape of the shell, and since animals whose shells are perfectly smooth on their outside are equally capable of producing these cavities with those whose external surfaces 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 other 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 a part of the forms in which a disposition of these organs different from that observed in Amoria, Pecten, Arca, Modiola, Unio, and Cardium, &c., where no complete division of the sae of the mantle exists, is found. In Pholas the branchiae are prolonged into the inferior siphon, and as they are not 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 siphon, and so gains access to the interior interlaminary spaces of the branchie (ovoiducts of some); and by this superior siphon the ova, yemas, and secretions are discharged. He also remarks, in another part of his paper, that the ovioduct is distinct from the sac in Modiola, Mytilus, Lithodomus, &c., whilst in Tellina, Cardium, Macrta, Pholas, Mya, and most others, the ovoiduct is discharged into the excretory organs.

To return to the perforating habits of these animals. The accompanying cuts will convey some notion of their ravages upon the substances which they penetrate:—

Pholas stricture in wood.

Pholas has been found at depths varying from the surface to seventeen fathoms, and Xylophaga from the surface to forty-five fathoms.

The soft parts of Pholas Dactylus and Pholas crispata are well shown in the preparations 133, a, b, c, and d, in the museum of the College of Surgeons (Preparations of Nat. Hist. in Spirit).

The species are numerous, and some are very abundant on our own coasts. 'Of these,' says Mr. G. B. Sowerby, 'Pholas crispata, Dactylus, candida, and parva, are the most common; several others are described by Turton, in his British Bivalves, of which we are quite convinced the P. lamellata is only the young of P. papurosa: we are not acquainted with his P. tuberculata. Much confusion appears to prevail in regard to several very distinct species among these we believe the papurosa of Turton is the striata of Montagu; the clavata of Lamarck is the striata of Linnaeus, but not of Montagu.' The number of living species of Pholas noted by M. Deshayes in his Table is fifteen, and of these one, P. candida, is recorded as living and fossil. In the last edition of Lamarck, ten species only (including Xylophaga) are recorded: this, notwithstanding the errors which have been committed by those who have taken difference of size or age for specific difference, must be far below the mark. For instance, we do not find, in the work last referred to, any of the nine species described by Mr. G. B. Sowerby from Mr. Cuming's collection in the Zool. Proc. for 1834.

The following cuts, with those previously given, will show the variety of form put on by the shells of this genus:

\* Zoologists sometimes make the word 'Pholas' masculine, sometimes feminine. Linnaeus made it masculine, and as it should be considered,
Pholadidae of Loven.

This is the genus Pholadidae of Loven.

Fossil Pholades.

Mr. G. B. Sowerby (Genera) observes that fossil Pholodes are rare, but that they occur in the calcareous and contemporaneous formations, in several places, and also in our crag: several very interesting specimens, he adds, are found in Italy and in Touraine, as well as in the vicinity of Paris, where shells of this genus and several other perforating shells have been discovered in a fossil state in the cavities which they have themselves formed. M. Deshayes, in his Tables, gives the number of fossil species (tertially) as nine; but in the last edition of Lamarck only two appear: one, P. candida, recent and fossil; the other, Pholus Jovarius (Coenomonas) fossil only. In Professor Phillips's Illustrations of the Geology of Yorkshire, we find Pholus recumbens 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 Pholus gigantus and praecox; noted: the first from the gault and the lower green-sand, the second from the lower green-sand and Blackdown.

Phonygama, M. Lesson's name for a genus of birds placed by Mr. Swainson in the subfamily Corvina 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 frontal-plumes; upper mandible distinctly notched; occiput very large, obtuse in a deep depression of the bill; the aperture large, 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).

Phorygina. (Patmaurada.)

Phorium, a genus of plants of the natural family of Liliaceae, tribe of Lilioidh, Angiosperms 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 exserted; capsule oblong, three-corned; seeds fibrous; very large, and impressed; embryo in the centre of the seed, longer than half the albumen, with its radicle next the umbilicus. The root is tuberous, fleshy, 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-woved, equitant at the base, leathery, 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 fibre, which has been of late 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 favourable to its growth. It grew remarkably well for a number of years in the Chelsea 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.

Phorium, the Montfort's name for the trochoid form which is loaded with pebbles, shells, &c. (Trochus agglutinatus) of authors, genus Omatus, Humph., generally known to collectors by the name of Carrier Shells. [TROCHIDE.]
PHO

110

PHO
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). It is extremely inflammable, and has been known to take fire spontaneously in the atmosphere when its temperature was not above 60°. Its specific gravity is about 1.77. Phosphorus is also soluble by the aid of heat in sulphuric acid, sulphur and phosphorus, and on cooling from solution in the last-mentioned it has been obtained in dodecagonal crystals; and by mere fusion and slow cooling of a larger quantity, it has been procured in octahedral crystals.

Oxygen and Phosphorus combine with great readiness, and form several different compounds. We shall first describe the Oxide of Phosphorus.—This is prepared by melting phosphorus in hot water, and in this state forcing a jet of oxygen gas upon it. The phosphorus burns under water, and the results are phosphoric acid, which remains in solution, and which we shall presently describe, and a red pulvulent solid, which remains at the bottom of the vessel, and is the oxide of phosphorus. Its properties are, that it is inodorous and tasteless, and is insoluble in water, alcohol, ether, or oil. It undergoes no change in the air, even when heated to redness; but in water and in nitric acid it dissolves. In chlorine gas it inflames. It decomposes nitric acid readily, and combining with its oxygen, it becomes phosphoric acid. It does not possess either acid or alkaline properties.

It is composed of—
One equivalent of oxygen . . . . 8
Three equivalents of phosphorus . . . 48

Equivalent . . . 56

Hypophosphorous Acid was discovered in 1816 by M. Dulong. When phosphorus is burned in an atmosphere of oxygen, sulphuric acid, and barytes; this earth combines with both these acids, and the substance of barytes, being insoluble, is precipitated, while the hypophosphite is soluble, and sulphuric acid being added to the solution, sulphate of barytes is precipitated, and free hypophosphous acid remains in solution; by evaporating this, a viscid strongly acid substance is obtained, which is hydrated hypophosphorous acid.

The properties of hypophosphorous acid are, that it is liquid, uncrystallizable, has a powerful taste, is heavier than water, and cannot be obtained in a dry state. When subjected to the action of heat, it is quickly decomposed into the phosphoric metaphosphoric and phosphoric acids. Water dissolves this acid in all proportions; it acts very powerfully as a deoxidizing agent, taking oxygen from many compounds containing it: it never forms an acid combination with any salifiable bases, forming salts which are termed hypophosphites; these salts are remarkably soluble in water; they are usually deliquescent, and crystallize with great difficulty.

Hypophosphorous acid is composed of
One equivalent of oxygen . . . . 8
Two equivalents of phosphorus . . . 32

Equivalent . . . 40

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, the phosphorus takes the chlorine from the metal, and the volatile compound which condenses into a liquid is called phosphorus acid. When this chlorid of phosphorus is mixed with water, mutual decomposition occurs; the hydrogen of the water and the chlorine of the chlorid of phosphorus unite to form hydrochloric acid, while the oxygen and phosphorus unite to form phosphoric acid. By evaporation the hydrochloric acid is expelled, and when it has been continued until the residue, while hot, has the consistence of a syrup, it becomes a solid crystalline mass on cooling, which is called 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 rared 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 phosphatic acid; it was however subsequently shown by Davy to be a mixture of phosphoric and hydrochloric acid.

Phosphoric acid appears to be composed of
One and a half equivalents of oxygen . . 12
One equivalent of phosphorus . . . . 16

Equivalent . . . 28

Phosphate of Ammonium is procured by adding carbonate of ammonium to the acid to saturation. It crystallizes in decaheped needles; when heated, it is decomposed, giving again phosphoric acid and ammonia; but ammonium phosphate 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 has been already mentioned, in combination with lime, forming bone, but also in some vegetable products, and often in the bowels of the earth, combined with lime, forming a mineral which, when crystallized, is frequently called apatite. It also occurs in combination with oxide of iron, copper, lead, manganese, and uranium; but the quantity of these compounds is by no means large, and they are regarded chiefly as objects of curiosity.

Phosphoric Acid may be artificially formed by the direct combination of phosphoric and sulphuric acids. 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 action of the acids, and so great is its affinity for water, that when the solid acid is collected, and a little water is added to it, it is converted into a hydrate with explosive ebullition, owing to the heat which is evolved during combustion. Phosphoric acid, when free from water, is exceedingly fixed in the fire, but when the hydrate is heated it is dehydrated.

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

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

Equivalent . . . 36

Phosphoric acid is colourless, inodorous, dexterous, extremely sour to the taste, and acts strongly on vegetable blue colours; it does not however, like sulphuric acid, destroy the skin when spilled on it, nor does it pass into the veins to Professor Graham. Phosphoric acid is peculiarly disposed to combine with different proportions of water, and these compounds exhibit properties so different, that they might be supposed to be three different acids, instead of different hydrates of one and the same acid. When the dry acid, obtained as described from the combustion of phosphorus, is thrown into water, a mixture of the three hydrates is obtained in variable proportions, but they may be separately obtained as pure states from the common phosphoric acid of the earth, after it has been purified by solution and re-crystallization. Decompose a warm solution of this salt by means of a solution of acetate of lead, and wash the precipitated phosphate of lead, and then pass a current of hydrochloric acid through it while suspended in water. When the excess of hydrochloric acid has been expelled by heat, a very sour fluid remains, which, according to Professor Graham, is a terhydrate of phosphoric acid; but following the practice of some other chemists, we have reckoned the equivalent of phosphates at only half the weight which he has done, and consequently this acid we regard as a sesquihydrate, composed of

One and a half equivalents of water . . 12.5
One equivalent of phosphoric acid . . . 36

Equivalent . . . 49

This acid is unalterable by boiling its solution or keeping it for any length of time. The class of salts which this hydrate forms are the old or common phosphates, which give a yellow precipitate with nitrate of silver. Common phosphates of soda contain therefore this sesquihydrated phosphoric acid.
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 when poured into 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 acetic acid and phosphoric acid 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 hydrosulfuric acid, consisting of

One equivalent of water = 9
One equivalent of phosphoric acid = 30

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 sesquihydrate.

Metaphosphoric Acid. — If biphosphate of soda be heated to redness, a salt is formed which, treated as the last, gives an acid liquid, containing the metaphosphoric acid or dihyd- drated phosphoric acid.

Glacial phosphoric acid is also in general mostly metaphosphoric acid. This hydrate is characterized by producing a peculiar smell, which, in the presence of a lighted match, is afforded by the salts of earth and metallic oxides; precipitates which are remarkable semisolid bodies, or soft solids without crystallization.

Hydrogen 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 results, which is a solid phosphuret of hydrogen, containing less hydrogen than

Phosphuretted Hydrogen Gas. — This gas was obtained by Gengembre in 1781; it is procured by boiling phosphorus 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 sulphuretted 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 inflammable 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 is obtained as in hydrosulfuric acid, is not spontaneously combustible. It has been further 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 1.1080th to 1.800th 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 = 9
One equivalent of phosphorus = 16

Equivalent = 17.5

Chlorine and Phosphorus combine in two proportions, forming the protochloride and phorochrome.

Protochlorid 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 has generally a reddish colour, and in the presence of a little undecomposed phosphorus. When this has had time to deposit, or when it is purifled by slow distillation, it becomes limpid and colourless. It has a suffocating odour, and exhalates and fumes when exposed to the air. Its specific gravity is 1.154. It does not alter the colour of dry litmus paper, but if moist, then hydrochloric and phosphoric acids are formed, which reddens and turns 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 chloroform gas; a white, flaky, volatile compound is formed, which is the perchloride. It is volatile, rising in vapour at 200°C. It is fusible under pressure, and crystallizes in prisms. When dry litmus paper, owing, as has been supposed, to its acquiring oxygen 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 = 90
One equivalent of phosphorus = 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 the azote upon 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 composed of very minute crystals, it remains fine and insubstantial even at a red 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 phosphorus = 16

Equivalent = 30

Sulphur 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 pounds of sulphur with five parts of phosphorus; a reddish-brown liquid was obtained, which was rendered of a light yellow and semitransparent by agitation in solution of ammonium acetate.

This compound remained fluid even when cooled down to 20°C. and was perfectly liquid at 32°C. After being kept for some weeks in a bottle of water, crystals were deposited which were sulphur, and at the temperature of 40°C it became a crystalline mass; the relative proportions of sulphur and phosphorus appeared to be four and eight, and it was therefore probably bisulphuret, consisting of:

Two equivalents of sulphur = 32
One equivalent of phosphorus = 16

Equivalent = 48

Bromine and Phosphorus combine when brought into contact in a flask filled with carbonic acid gas: heat and light are evolved. When two bromides are 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 22°F. When heated it is readily converted into vapour, 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 on a small quantity of water, the compound, heat is 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 to a red-coloured liquid and is afterwards converted into a vapour of the same colour; by fusing it yields rhombo crystals, but by sublimation 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 hydroiodic and phosphorous 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 hydroiodic and phosphoric acids; it is probably composed of two and a half equivalents of iodine and one of phosphorus. 

_Selenium and Phosphorus_ may be made to combine by dropping the selenium into the melted phosphorus. It is an important compound, and is probably a di-seleniumure.

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 enters in a diluted state, in which it is disarmed of its virulence, as an ingredient of many common articles of food. One of the chief sources of its use is the starch of the cereal grains, such as wheat-flour, in the starchy parts of which, when burnt, it amounts to 23 per cent. (From this it arose that the Romans put, in no alliance with their animals, such as onions, in which it exists as a phosphatn of iron; polygonal nuts and other plants, in which it occurs as a phosphatn of lime. It also exists not only in the bones and exceedingly in the teeth of animals, 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 yolk of eggs, in the liver, and also the brain, in which organ of the human being it exists in the amount of 3.5 to 2.7 per cent.

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 phosphorus and phosphoric acids. Hence when brought 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 cuts and wounds is extremely strong. The excretions are 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 phosphorus in its fixied, volatile, or in ethers, 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 protrusion 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 magnesia or chalk.

**PHOTUS** 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 inimitable morality. He was ordained by the emperor Michael III., who employed him in various important offices. The emperor sent him on a mission to Assyria (probably Persia is meant), and on his return made him proto-spataparius, or commander of the guards, and protos-secretarius and member of the emperor's privy council. Bardas, the uncle and colleague of Michael, was very partial to Photius; and having, on account of some dispute as to jurisdiction, removed and banished the patriarch of Christ, the emperor determined to put Photius in his place. Photius, being a laymen, 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. The year 853 is noted for another appointment also—there was too glaring, especially as Ignatius, although threatened and imprisoned in order to force him to abdicate, refused to do so. A subversive 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 Ninianus L., 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 the legates declared illegal; and the emperor again assembled his council, 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, or 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 emperors of Constantinople, the patriarchs of that city, supported by the emperors, had appropriated to themselves the spiritual jurisdiction over the extensive provinces of Illyricum, Macedonia, Achaia, 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 church of Rome, according to custom, had the primacy, which was a sort of acknowledgment of spiritual obedience. In short Nicholas demanded the restitution of the provinces of Illyricum, Macedonia, Achaia, Sicily, and Bulgaria, which Photius stoutly refusing, the pope assembled a council in Council of Constantinople, A.D. 869, and charged Photius with the crime of attempting to make the bishop of Rome illegal, and excommunicated him with all his accusers. Photius however remained quietly in his see; and in the year 866, having assembled a council at Constantinople, he produced five charges, some real, 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 that he was to be removed from his see. 

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; 3, that they had a priest for every Lent; 4, that their priests did not eat flesh; 5, that they had not the monastic form of life. To this Photius, being called 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 and partly by some of the Western churches.' (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 sacrament, and so 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 deprecate 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 emperors, in which he made himself descended from Tridades, 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 reelected patriarch of Constantinople and Pope. Photius induced to approve his nomination in view of the view of 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 lasted, and it was not finally ended by two centuries later, when the patriarch Michael Cerularius, 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 Photius, for reasons not sufficiently ascertained, 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 chiefly due to the fact of Photius and his followers being the most powerful and influential of all the Greek and Latin Churches. He was, however, more than any other living writer, a mighty influence in the church, and in the Roman Catholic Church against him. All however agree in admiring 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 quos legit et ensuit Photius,' with a Latin translation, fol. 1653. 2. Inim. Bekker published the Greek text, corrected after 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 he had been since 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 279 works without reckoning the plates of metal set up to him. Isidore (Graec. v. 35) gives an accurate list of the works noticed by Photius. 2. a Greek Lexicon, published by Hermann, 4to. Leipzig, 1808: another edition by Porson appeared after his death. 3. on History, fol. London, 1631. 4. Nomocanon, being a Collection of the Acts of the Councils, to the Seventh Ecumenical, with the corresponding degrees of the Emperors concerning Ecclesiastical Matters, Baze, 1632. 5. a treatise, 'Avxarous Latinus de Processione Spiritus Sancti,' and other theological and controversial works, several of which are still unpublished; among others, a poem on the Ps. Scians, of which Montfaucon gives some fragments in his 'Bibliotheca Coisliniana.' 6. 'Amphilocho, being Answers to Questions relative to various Passages in the Scriptures, with an Explanation of the Epistles of St. Paul.'

PHOTOCHEMICAL 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 plate, upon which the images of the objects are thrown. The operation is named after its inventor the Daguerreotype, and the process itself either photography, photography, or heliography (sun-drawing). The invention was first formally communicated to the Academy of Sciences of Paris, April 5th, 1839. 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 were conspicuous. In this first experiment, as of 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 which 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 Daguerreotype. The object is fixed, and the image becomes a part 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.

This the Daguerreotype are so far circum-
scribed, the invention is highly valuable, because it not only ensures perfect fidelity of likeness, in which it is most essential, but also that it should reflect, with the most intense and patient hand and eye, but also gives us the minutest details——those which are imperceptible to the naked eye, and of course cannot possibly be represented upon paper.
tuning whether the absorption of light alone will produce effects analogous to what is observed to follow the absorption of calorific. For this purpose it would be only necessary to prepare a differential thermometer whose bulbs were the same and whose spouts were the same. The calorific rays 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 be detected would be an 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 of light, because the incident light is further shown to be that 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 *Encyclopædia Britannica*, wherein he observes,—The rays which fall on the clear bulb pass through it without losing any of their intensity, 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 until it further increases comes to be counterbalanced by an opposite decreasing power derived from the rate 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 fraction of the light passing through the clear bulb at any one time will be a measure of the momentary impressions of light, or its actual intensity.

Allowing that the light incident upon the clear bulb is wholly transmitted, and that that which strikes the dark bulb is wholly absorbed, assumes a latent form, and then acts as heat, it 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 (Heat, p. 67) that the calorific rays which accompany the light would produce more amount of heat absorbed by the dark than by the light bulb. This has since been satisfactorily established by the observations of Thomson and others, that, as a measure of light, the instrument is rendered as useless.

The defects of Leslie's photometer were 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 Taunton, who, in 1835, communicated to the Royal Society the description of a new photometer. In order to intercept the calorific rays accompanying the light upon which 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 a square sheet of glass, from which the transmitted light, and, as was supposed, thereby converted 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 as nearly as possible, 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 the escape of light, or other heat, which might otherwise be absorbed by the transmitted light, and, as was supposed, thereby converted 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 as nearly as possible, 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 the escape of light, or other heat, which might otherwise be absorbed by the transmitted light, and, as was supposed, thereby converted it into heat, which became sensible by its expanding the air within the cylinder.

So long as the air in the two cylinders possessed the same degree of elasticity, 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 elasticity of the two bulbs of air filled with air from the two cylinders and that the medium had been admitted through one aperture than through the other. To compare the relative intensities of the two lights, the instrument 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 light. Supposing the whole of the calorific 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 light was inversely proportional to the squares of their distances from the light 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 source of light.

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 Bouger, who published it in his *Traité d'Optique*, in 1769. The annexed figure represents a vertical section of the instrument. It consists of a rectangular box open at both ends and divided into two equal parts by a vertical plane, A. There is a narrow rectangular slip AB, covered with tissue 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 isocele 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 in that case 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 they may be reflected 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 CF 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 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 is 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 demonstrate which absorbs most of the rays equally inclined to the surface. So long as the stick is at such a depth, 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 their perpendicular distances from the surface, and inversely proportional to the sines of the inclinations of the intercepted rays to the surface. The two methods are theoretically perfect, when applied to lights of the same colour; those which precede, though independent of the colour of the light, rest upon hypotheses which, if not untrue, are unestablished.
(For further information the reader may consult Lambert’s Photometria; the article ‘Light in the Encyclopaedia Metropolitana,’ by Sir John Herschel; The Edinburgh Philosophical Transactions, x., part 2; The Transactions of the Royal Society, 1831; and Dr. Wall’s Journal, 1832, ii. pp. 321 and 339; iii., p. 105: and 1830, iii. new series, p. 294.)

PHRÆATE. [PARTHIA.]

PHRAGMITES, or the Reed, is a plant formerly regarded as a species of Arundo, but now separated from that genus on account of its lower stem being male while the others are hermaphrodite, and its racis being fringed with long silky hairs. It is a tall plant with annual stems and a perennial root, and is found exclusively in places overflowed even on the summits of the Pyrenees, which it crosses through Europe, and is common in Siberia, Japan, North America, and even New Holland, forming thick coverts, and yielding an abundance of stout durable grass of great service for the purpose of thatching the roofs of buildings. This is undoubtedly the phragmites (Phragmites) of the Greeks. A second species is said to grow in Egypt, and a third in the Isle of France; the two latter species are however little known.

PHRAGMOCRÆS, Broderip’s name for a genus of camered shells found hitherto only in a fossil state. 

Generic Character.—Animal unknown. 

Shell incurved and compressed, more or less conical; spire without a decided inner or outer spiral; growth subumbilicate, with a single spiral costellae; aperture contracted at the middle, its inner extremity produced into a subcilindric beak. 

This genus is distinguished from Orthoceras by being cut at its inner extremity with a nearly marginal siphuncle; and also from all the species of the genus except O. piforme, 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 (Orthoceras ventricosum Steinitzgen), and P. compressum, from the lower Ludlow rock, are figured in Murchison’s great work on the Silurian System; where another species, P. nautileum, is also figured with a distinct siphuncle.

PHRANZA. [BYZANTINE HISTORIANS.]

PHRAXÆRA. [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 Rameau’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. The phrase is only a convenient form of expression; it is nothing more than the Greek word ‘Phrases,’ as used by the Thesaurus. 

PHRENOLOGY (from φρεν, mind, and ἄνευς, 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 no man can be more 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 the opinions of most of his disciples, is that the brain is the part of the body by means of which all the powers or faculties of the mind are manifested.

The first principle, that of the plurality of organs in the brain, is supported, 1, by the analogy of the other compound organs or systems in the body, in which each part has its special function, for example, the digestive system, 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 individual cases, 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 peculiar propensity, or evinces a singular aptness to some study or occupation, and it is a matter of daily 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 all the conditions of the whole being equal, could affect the mind generally, depressing or exalting 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 is also supported by the phenomena of some forms of mental derangement, which are not usual 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 deranged, 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 their 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, the diminution of some, and the increase of others, is its own peculiar strength, or even increase in power. 5. The most important part of the cerebral 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, the most considerable are exercised in the forms of mental representations to which they are most properly appropriated. 6. It is stated that the examination of the brains of individuals, each remarkable for some peculiar propensity or talent, has demonstrated a constant and direct correspondence in the development of a certain portion of the brain; and that thus the results of the observations on which 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 the part of the brain 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 that which has been called primitive, or original, are determined. Every 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 one kind of animal and not in another, and which, 2, possesses organs 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 forty. Besides the mental faculties, there is moral, 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 only operate on the intellect, but are combined with some other emotion or affections which is not more propensity. The intellectual faculties also being divided into the prospective and the reflective. The subjunctive figures and the references to them will at once indicate this distinction. The mental organs are represented on the exterior of the head which are supposed to correspond with the parts of the brain belonging to each, according to the system of Dr. Spurzheim. We have also illustrated the figure, as the face of 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 still exists in the mental 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 fish, 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 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 infrequently 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 unimpaired. 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.

3. Indifference is 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 so 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 concentricativeness, 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. It is placed 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 philioprogenitiveness.

5. Combative is the natural disposition which men and animals feel in various degrees to 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 fighting and others who were peaceable and timid; 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

* It may be necessary to mention that the chief modifications introduced into the system of Dr. Spurzheim (whose labours, after so long as being received by the great majority of phrenologists in this country) are expressed in the differences of their terms. Gall designated the organs according to the actions to which he believed they were most inclined; Spurzheim according to the sphere of their faculties. Thus the organ which Gall called the organ of love, Spurzheim termed the organ of concentricativeness, observing that, though many in which Spurzheim was grossly developed had commenced moral, yet many others, though having a propensity to destruction, were the destitute of human life, nor felt any inclination to its pursuit. So also Gall's organ of theft is named by Spurzheim the organ of destructiveness, a faculty which gives the propensity to acquire without reference to the means, which, in a man with a highly developed concentration, would be honest, but in one without the latter faculty, would be theft or fraud of some kind. It will be seen that in Spurzheim's nomenclature the sphere of activity of each faculty, as he terms it, is much more extended than in Gall's. [See further, Gall: SPURZHEIM.]
several species of animals, and remarkably in the different varieties of days.

6. Destructiveness, 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 were their objects, or the mode in which they were carried on. Thus murder as a form of destruction is considered, as is murder, even 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 being the cause of their destruction. When its development is left to unrestrained action, 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 monomaniac. 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 are seen in a complication of the width at this part 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, when these are of a dubious character. Its degree of development is 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. 5. It is said that the accumulation 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 degree in which the several organs of his system are developed, the organ of acquisitiveness being found to promote the prudent accumulation of property by honest means; in others, to avaricious and purposeless money-making by any method; in others, to theft or fraud. The seat of its organ is at the back part of the temple.

9. Constructiveness is the faculty which leads to the construction of all kinds: guided by it birds build their nests, rabbits burrow, beavers make their huts; and men are directed into the building of ever so many different branches of the fine arts, building, and various manual operations. Its organ is situated at the lower part of the temple, at 9.

10. Egoism 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 degeneracy 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 inhabitiveness (2), with which Dr. Gall (as already mentioned) confounded 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 society say? The effect of the habit of the organ is that without attending to the manner of acquiring it; and may therefore be directed to objects of the highest importance, as well as to such as are of no moment, or are even hurtful. An object placed by the organ is regarded, if its utility to the subject aspired to be of great importance; vanity, if claim be laid to distinction on the score of trifles. The organ is seated on each side of self-esteem; when developed it generally elongates the upper and back part of the head, and the sides spread out laterally so as to widen rather than lengthen it.

12. Cautionousness is the disposition of the mind which leads a man or an animal to take precautions in whatever he has to do; "it doubts, says but, and continually exclaims take care" (Spurzheim). When too active it causes irreso-
organ is situated in the upper and lateral part of the forehead, and in the earlier Edinburgh casts is marked 32.

21. Imitation. Those who have this faculty highly developed are fond of seeing and of imitating the gestures, voices, manners, and, in general all the movements of some man who is generally affective in children 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, imitating the voices and manner of whatever forms 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 a class of faculties which he calls the result of collecting of external objects and their physical qualities. It is the faculty which recognises the individual existence of beings. It is this also which in excess induces men to personify everything of which they speak, which is always absent in the organ of this part of the eye-brow, so that when much developed, it enlarges the lower and lateral part of the forehead.

23. Language is this faculty which makes us acquainted with arbitrary signs, which remembers 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, these words often entered his head, and 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 be developed by some previous or subsequent squint, suggesting 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 appreciated by the preceding power. Its organ is placed at the inner corner of the arch of the eye-brow.

25. Weight. It is believed that the mind estimates the weight of objects as well as many of the other things of the world, not 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 neighborhood 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. Not all the same faculties are developed by the re-collection 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 the original faculty of the 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 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. Order. It is believed that there is a faculty which gives a disposition to arrange and classify things in order, as 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 and size. Classification is the result of this power on it, and it produces the pleasure of seeing things complete. Its organ is situated between those of colouring and calculation.

29. 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 anecdotes; are inquisitive, and desire information on every branch of natural knowledge. Individuality takes cognizance of the manifestations of nature which are nouns 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 the organ of this part of the eye-brow, so that when much developed, it enlarges the lower and lateral part of the forehead.

30. 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.

31. Melody or Tune. The organ of tune bears the same relation to its faculty as the organ of time to its faculty. 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, which is absent in the outer part of the eye-brow, so that when much developed, it enlarges the lower and lateral part of the forehead.

32. Language. This is the faculty which makes us acquainted with arbitrary signs, which remembers 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, these words often entered his head, and 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 be developed by some previous or subsequent squint, suggesting appearance, and making his eyes appear unusually wide apart.

33. Reflection is the faculty which in its first is always associated with the eye-brow, and in its second, with one of the lateral portions of the forehead.

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 the analogies and similitudes of things 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 is the reflective faculty which engages men in the study of the causes and origins of things, and which enables us to form conclusions as to the causes of various events, even those that are not known to us. It is a peculiar faculty for the faculty of analogy. The faculty of individuality makes us acquainted with objects; eventuality, with facts; comparison, with the analogy, identity, difference, and other relations of things; and causal reasoning seeks to search for the causes of these faculties, 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 fullness of the forehead 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 it professes to be, a system of philosophy of the human mind, founded on the physiology of the brain. (Combe, System of Man, p. 1.) Not having detailed the faculty of arithmetic, whatever concerns number or calculation belongs to it, and hence Mr. Combe 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.

30. Order. It is believed that there is a faculty which gives a disposition to arrange and classify things in order, as 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 and size. Classification is the result of this power on it, and it produces the pleasure of seeing things complete. Its organ is situated between those of colouring and calculation.

31. 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 anecdotes; are inquisitive, and desire information on every branch of natural knowledge. Individuality takes cognizance of the manifestations of nature which are nouns 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 the organ of this part of the eye-brow, so that when much developed, it enlarges the lower and lateral part of the forehead.

32. 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.

33. Melody or Tune. The organ of tune bears the same relation to its faculty as the organ of time to its faculty. 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, which is absent in the outer part of the eye-brow, so that when much developed, it enlarges the lower and lateral part of the forehead.

34. Language. This is the faculty which makes us acquainted with arbitrary signs, which remembers 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, these words often entered his head, and 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 be developed by some previous or subsequent squint, suggesting appearance, and making his eyes appear unusually wide apart.

35. Causality. The reflective faculty which engages men in the study of the causes and origins of things, and which enables us to form conclusions as to the causes of various events, even those that are not known to us. It is a peculiar faculty for the faculty of analogy. The faculty of individuality makes us acquainted with objects; eventuality, with facts; comparison, with the analogy, identity, difference, and other relations of things; and causal reasoning seeks to search for the causes of these faculties, 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 fullness of the forehead 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 it professes to be, a system of philosophy of the human mind, founded on the physiology of the brain. (Combe, System of Man, p. 1.) Not having detailed the faculty of arithmetic, whatever concerns number or calculation belongs to it, and hence Mr. Combe 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.
ness of the coverings of the brain are not such as would lead into error; the majority of them are nearly constant in their amount, and are easily recognised by any one acquainted with the anatomy of the skull, and the rest are not pursued in the diverse reasons given 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 examination can hesitate to admit that the form of the greater part of the exterior of the head corresponds nearly with that of the surface of the brain as is necessary for cranio
gorical purposes. The parts in which the correspondence is often inexact are those over and in the neighbourhood of the eyes; in that region, and where the bone is thickest, 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 beneath the bones of the face) 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, individuality, size, and weight, and part of that of locality are supposed 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 circumstances, it is justly supposed that there 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 brain and its functions; and on the general rule the subjects of disease are excluded in pheno
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 phenology cannot fairly be deduced as evidence, because the statements which were made then were not based on correspondence of mental faculties after injuries of the brain, regard only the general powers of sensation, volition, memory, imagination, &c., 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 amativeness) by injury and disease of the parts containing them. The examination 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 injury, and exposure to the influence of the atmosphere, interference with the circulation of its blood, &c. 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 which may perhaps be too fatuous to admit of any conclusions being drawn from them.

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 evidently contrary to the analogical mode of reasoning which we pursue in the examination of organs; and all organs of smell are formed on the same principles, and we might presume are all organs of the mind; so that as by the size or extent of distribution of their nerves we can determine in each animal the power of its sense of smell or sight or hearing, so by the size of a special part of the brain we might in each estimate the energy of some corresponding faculty. Between the vertebrate and the invertebrate ani mals, for example, there is an abrupt step in the condition of the nervous system; the lowest of the former class differs widely from the supra
anophageal ganglion and the gangliated cords of the latter; we might therefore expect to find an equally sudden determination of mental power. Yet none such occurs; but although the supra anophageal ganglion (which may be regarded as the brain of insects) is only so much larger than the rest of their ganglia as is proportionate to the number of organs requiring to be supplied with nerves from it, yet none will deny that many insects exhibit more excited psychical powers than the majority of either fish or reptiles do. But, taking the vertebrata alone, in all of which there is a certain general plan observed in the nervous sys
stem, it is not so easily deduced in each species how the parts of the brain are developed in proportion to the energy of the faculty ascribed to each of them. The phrenological function of the cerebellum, for example, is almost equally powerful in all species; yet the relative size of the organ and the cerebrum is comparatively lessens as one descends through the order of verte
brata, and in the batrachia, in which its supposed function is extremely energetic, it is more narrow cord passing across the face of the bone than in any of the other parts of the brain, which is found decreasing as it is examined in the descending scale of vertebrate animals, is not the anterior, the seat of the intellectual faculties, but the posterior, in which are placed and the organs of the animal propertiee of comparison to the cerebrum. In this is to be found in the degree in which the hinder part of the cerebrum overlaps the cerebellum; in man alone does the former ever completely cover the latter; in idiots often fails to do so; in monkeys it covers a still lesser portion; and continuing down to the mammalia, the posterior lobes of the cerebrum grow constantly smaller, and the cerebellum is proportionately more, and at last completely, exposed. From these facts it might perhaps be assumed that the anterior lobes of the cerebrum are the intellectual faculties; and such an assumption can be avoided only by believing that there is no analogy between the form of the posterior lobes of the cerebrum in man and mammalia, as there exists in the cerebellum, and that it may exist, and yet phrenology may be true; but in balancing the probabilities of its truth or falsity, they must not be neglected.

The necessity which is felt of limiting the comparison of cerebral and psychical development to individuals of the same species* proves that some other condition than size is essential in determining the energy of each faculty, and that peculiarity of form and position of parts of the brain may give the external appearance of excess or deficiency of size; admissions which must throw doubt on the suficiency of the only means which phrenology possesses of collecting facts to support its theory. If structure and form render it impossible by the size alone to determine the psychical character of the individual, how much less can we form conclusions thus drawn from facts be overthrown only by facts that contradict

* Although, to meet the objections mentioned above, phrenologists insist on the necessity of comparing only individuals of the same species, it is to be ob served that they cannot obviate this necessity by any means the obtained by the geometric mean, as for example by the determination of the numbers of combustible and non-combustible organs and of that of constructiveness by comparing the heads of the hare and the rabbit.
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 maxims and its philosophy, cant and claptrap, are 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 consistent observations; seeing that so many have been the instances in which it has been found in contradiction, and facts 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 deceivers. We believe that in this we do not step beyond an objection commonly urged by the enemies of 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 disproven them all by facts.

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 difficult of all to understand. If, then, the physiology of the brain be 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 whole 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 cannot be truly elucidated by the most accomplished physiologist as (if phrenology be true) 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 has led to so extraordinary a result, will appear greater still when some of the fallacies are 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 when all other conditions are the same. This is admitted by phrenologists, who maintain only that, ceteris paribus, 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. If the brain is therefore probably 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 quantity is sufficiently opposed to their opinions. 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 size 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 be 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, most of those which 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 forming a judgement of which such a varying source of error as here is indicated from many points of view, can avoid suspecting that phrenologists, when they pretend to have overcome the difficulty, have merely wandered into the fallacies of error.

It is possible that his followers constantly call upon the public to decide upon phrenology by their own observations; proving that they respect no different matter to observe and drawn correct conclusions in the most ambiguous phrases. If they have a plan then to base their theory so as not to take their observations, it is easy to avoid the fallacy committed by their followers. He who sees the true nature of observation, will not be surprised at the present to observe. The more philosopher Dr. Gall did not fail to admonish his followers not to attempt explaining phrenology.

Again, if the condition of quality (which are included any important circumstances connected with both the temporary and permanent state of the brain, each of which is probably not less important than size) must be taken as a constant source of inappreciable error in estimating the material condition of the organs, there is scarcely less fallibility in the other element of a phrenological observation, viz., the determination of the condition of the individual examined. The actions of men are taken as the index to their phrenological state; but (not to mention the cases in which men feign the possession of dispositions and sentiments which they have no idea of possessing) there are numerous instances, in which there is no intention to deceive, the same actions proceed from different motives, and this phrenologist fully admits, for in many cases in which the size of certain parts of the brain does not agree with the supposed character, the phrenologist is perfectly familiar with the prominent 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 any faculty and its presumed organ is thus easily capable of explanation by the condition of other faculties and organs, then in every case the state of all the other faculties must become an inappreciable source of fallacy in endeavouring 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 be phrenological. The difference is the difference between 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 determine to the condition of a single part of the brain rather 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 doubt which is cast upon by the total absence of any anatomical peculiarity in the brain corresponding with the supposed 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 to believe in phrenology must believe in a psychical system which is opposed to his own opinions. As a confirmation in withholding his assent from phrenology as it at present stands. He may grant, as the writer does, that its theory is ingenious and probable; that its plan of classifying the faculties is no more natural than that of any other psychological system; that the existence of 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, on 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 further and any extended inquiry, 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 presumed, let him still withhold his assent as a direction to his inquiries, and will refuse to admit its applications in any important practice.

PHRONIMA, Latreille's name for a genus of Amphipodous crustaceans."

Generic Character.—Two very small setaceous antennae composed of a small number of joints. Four first feet (mâchoires extéreures de Latreille) in the form of small claws.
Tail more delicate than the body, terminated by six styles (which are elongated and forked at their end), and provided below with four or six natatory feet disposed in pairs, under the third, fourth, and fifth rings; these feet being formed by a small joint for their articulation with the tail, of a large, of a flattened joint, and two terminal filaments. (Desm.)


The first (Cancer sedentarius, Forsk.; Cancer gammadellus sedentarius, Herbst.) has a transparent body, which is naresco and dotted with red. Length not exceeding an inch.

- **Locality and Habits.** Lives at some distance from the coast, and keeps, according to M. Risso, in the interior of the body of Radiata belonging to the gener Pyrosoma and *Mysia.* Found in the Mediterranean and near Burma in Zetland.

*Phrygus.* This is smaller than the preceding, and very white. Found near Nice, in the interior of *Medusa* (Equo*gen.* of Pérès and Lessueur). (Risso.)

- **PHRYGUS.** M. Risso's name for a genus belonging to the second section of Amphipoda, viz. those furnished with four antennae.

**Genus Character.** Two superior antennae, large and somewhat flattened, antennæ, setaceous and very small. The ten feet properly so called are polygonal, formed of five flattened joints: the first pair short, delicate, and hooked; the second a little shorter than the third; the fourth very large, with its first joint wide and oval, the two following triangular, broad, and pointed, and the last long, pointed, arched, and falchic; the fifth pair shorter than the preceding, but of the same form. Body oblong, rather arched, somewhat rounded on the sides, with conspicuous transverse segments. Head prolonged in front in the form of a muzzle. Tail composed of five segments, which are nearly quadrangular, terminated by two oblong ciliated blades, and an intermediate short plate, which is flattened and rounded at the end. (Desm.)

- **Examples.** *Phrygus securitas* and *Phrygus macropodhalma.*

The first has an oblong body, yellowish anteriorly, red posteriorly; the head is provided with two small horns, with form a sort of crescent; 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 deep on a sandy bottom. Eggs transparent.

*Phrygus macropodhalma* has an oblong-violet-red body, with a transparent head; no horns; eyes very large, oval, and black; size less than half of that of the preceding species. Found near Nice, in February and July: at the latter period, the females are loaded with a quantity of very small globular eggs. (Risso.)

**PHYRIOA** (Sphyria), a country of Asia Minor. It is distinctly marked out, and accurately the boundaries of Phyria, as they differed at the time of Cymothous and Pomponius. Emperor Aretas, who deposed the emperors was bound on the west by Caria, Lydia, and Mysia; on the north by Bithynia, on the east by Galatia and Cappadocia, and on the south by Lycia, Pisidia, and Lycaonia. Before the establishment of the province of Galatia by the Gauls, who invaded Asia Minor, Phyria extended as far as the Halys. The antient writers speak of the Great and the Lesser Phyria; but when Phyria is spoken of by itself, the former is always included, as the latter was only a political division, and was included in Mysia, which was inhabited by several Phrygian tribes. The northern part of Phyria Proper was called Phyria Epicetus, or the 'Acquedot,' a name given to it when it was annexed by the Romans to the kingdom of Bosphorus (Strabo, xii. 567); and the southern part, which bordered upon Mount Taurus, was called Phyria Paroecides from this circumstance. In the fourth century the Romans divided Phyria into two provinces, Phyria Salutanus and Phyria Paeotana; the former comprising the eastern and the latter the western part of the antient province.

Phyria is a high table-land, supported on the south by Mount Eurythymus, and on the north by Mount Taurus, is 13 miles long, and 6 broad. It is watered by several rivers which run from west to east under the antient names of Ida and Temnon in Mysia, and Olympus in the neighbourhood of Brusa. Herodotus says (v. 49) that Phyria is fertile and high for the most part, and that it must be applied only to the western and northern parts of the country, since the country in the southern and eastern parts is covered with salt marshes, rivers, and lakes, which have no visible outlet. (P. C., No. 1118.)

Of these salt lakes, the most curious is the one called Tatta by Strabo (Tatula), which is 30 miles in length, and supplies by art the pasturage of a, important people. According to a ridiculous tale told to Herodotus in Egypt, Psammitichus, king of Egypt, made an experiment, by which he proved that the Phyrians were the most antient people in existence. (Hist. vi. 131.) Strabo says in another part of his work (vii. 73) on the authority of the Macedonians, that the Phyrians were a European people, and originally dwelt in Macedonia, where they were subdued, and the name most afterwards given it in Asia (vii. 292). They are said by Conon (as Ph. Phot.) to have poured over into Asia a hundred years before the Trojan war. Xanthus says (as Ph. Strab., xiv. 680) that they emigrated from Europe immediately after the Trojan war; but, as Strabo remarks, this could not have been the case, as they are represented by Homer (II., iii. 187) as settled on the banks of the Sangarius before that period.

We know scarcely anything of the early history of Phyria. There appears to have been a kingdom of considerable power in the northern part of Phyria under the Midian or Gordian dynasty. Strabo remarks (xii. 568) that the princes of Gordius and Midias were near the river Sangarius, in the country of the neighbourly Phrygians, that part of the dominions of those sovereigns; and that such a case is confirmed by an antient inscription discovered at Doganli by Colonel Leake, in which we find written in Greek, 'To King Midias, son of Arses, king of Phrygia, over Asia Minor, p. 31.) The first of this dynasty of whom we have an authentic account is Midias, the son of Gouris, 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 Gyges, king of Lydia, it is supposed that they have reigned before B.C. 718. The Phyrians were conquered by Croesus and added to the Lydian empire (Herod., i. 28), and were subsequently subject to the Persians. (Herod., i. 29.) On the division of Alexander's dominions, Phyria first came into the hands of Antigonus, and afterwards formed part of the dominions of the Seleucids. After the defeat of Antiochus the Great, Phyria was given to Eumenes, king of Pergamum; and on the death of Eumenes, B.C. 133, it came by his bequest into the hands of the Romans, together with the other dominions of the kings of Pergamon. (Pergamum.)

In Northern Phyria, the first town of importance on the west was Asan, near the source of the Rhindus (Aeved), which flows into the lake Apolloniatis. This town is not often mentioned by the antient writers, but it must have been a place of considerable importance, from the description of its ruins. (Strabo, xii. 567.) In the modern village of Tjandere Hesare is entirely built out of them. S.E. of Asan was Cotymus, or Cotymus (Kutaya), on the Thymbrias, which is still a considerable place. North of Cotymus, and near the modern village of Yeni, is from its union with the Sangarius, was Dorylaim. (Strabo, xii. 567.) This town is said to have been civico (Pro Flacco, 17), and is said by Athenaneus (ii. 43. Cascarboni) to have possessed some warm springs in its neighbourhood. Colonel Leake (p. 18) supposes it to correspond to the modern town of Eski-shehr, which is celebrated for its natural hot baths. Dorylaim is often spoken of by the Byzantine historians. East of Dorylaim was Midaim, also in Phyria Epicetus (Strabo, xii. 567), which was originally one of the royal cities of the antient kings of Phyria. (Strabo, xii. 568.) South of Dorylaim was Nacolia, which is frequently mentioned by the later writers. Colonel Leake (p. 24) thinks that Nacolia corresponds to the modern village of Pissamah Kalesi, near the valley of Doganlu, where he discovered some very remarkable monuments, which he supposes to have been the sepulchres of the antient kings of Phyria. The Phyrian Anyra (Ancyr) is conjectured by Mr. Hamilton (London Geog. Journ., vol. vii.) to have been at Kilishe Koi, at the western extremity of the lake of Simisuli.

In the south-eastern part of Phyria was Synnada, one of the most important towns of this part of the province in the time of Pliny, 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 a plain, which was watered with salt marshes, and covered with olives. It was a place of considerable commerce and traffic, as it was situated on the road from...
Apaneia Cibotus to Galatia (Liv., xxxviii. 15), and also in the way, or nearly so, from Apaneia to Ioniuni and Cilecita. (Cic. ad Att., v. 20; ad Fam., iv. 4.) Colonel Leake (p. 54) thinks that the site of SynnAda corresponds nearly to the modern village of Buiwalun. At a short distance to the east of the village of Daphne, 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., ii. 227.)

The most important cities in Phrygia were situated in the south-western part of the province. Of these cities Celeno was the most ancient. Herodotus says (vii. 56) that it is situated at the source of the river Meander, and not on the bank of the Celeno, a stream not less than the Meander. The Cataractes appears to be the same as the Marasys of Xenophon (Xen., Anab., i. 2, 57) and other writers. Xerxes, 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 Celeno, where he had a palace and a great park full of wild beasts. Celeno was celebrated in Greek mythology for the contest between Apollo and Marsyas. Xenophon says that Apollo hung up the skin of Marsyas in the cave where the river flows. Near Celeno was Apaneia Cibotus, which was founded by Antiochus Soter, who removed to the new city the greater part of the inhabitants of Celeno, which became in consequence deserted. Antiochus gained the name of Apaneia, from his mother Aphsa, who was the daughter of Artabazus and the wife at that time of Seleucus Nicator. (Strabo, xii. 578; Liv., xxxvii. 13.) Apaneia seems to have been a great wool-manufacturing city. 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 of Apaneia, but it appears, from the testimony of Poecke, Mr. Arundell, and Colonel Leake, to have been at a place called Dinglar or Dunarea.

South-west of Apaneia, and a little to the south of the river Kykys, was Colossus, which is mentioned by Herodotus (vii. 56) as the site of a large, flourishing city. Strabo (xii. 576) and Pliny (v. 29) however, speak of it as only a small place. At Colossus there was a large Christian church, chiefly, it appears, by the labours of Ephphados (Col., i. 7; iv. 12, 13), to which St. Paul, who does not appear to have ever visited Colossus himself (Col., ii. 1), wrote an epistle. Colossus was destroyed by an earthquake, together with Hierapolis and Laodicea, in the reign of Nerva. But it was rebuilt again, and became in the middle ages a place of considerable importance under the name of Chumes. Chomes 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. (Atkinson, in Sel. Cat., 1844-56) contains a description.

West of Colossus, and a little to the south of the Kykys, 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 Diospolis, and afterwards Rhaea; and we learn from Stephanus Byzantius that its name was changed into Laodicea in honour of Laodice I, the wife of Antonius II. There was a Christian church at Laodicea in the time of the Apostles. St. Paul speaks of this church in his epistle 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 was celebrated for the beauty of its plains, 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 nearly opposite Laodicea, to the north of the Kykys, 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 of a modern town, and extend for a mile or more in length and width. There are remains of a very large theatre and of other public buildings.

PHRYGIAN MODE, in antient Greek music. [Monr.] PHRYNICHUS. Several persons of this name are mentioned by the ancient writers. Phrynichus of Athens, the son of Polyphradmon, was a disciple of Thespis, and a writer of tragedies. He was upwards of twenty years the contemporary of Aeschylus, and probably he was about as 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 these five titles were celebrated as the works of Phrynichus. Phrynichus first exhibited n.c. 511, and he gained the prize for his 'Phoenician Women' (Φωνηκαί Εὐνομία) n.c. 476, the subject of which was drawn from contemporary history, being the victories of Athens in the Persian wars. It 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 has met a great improvement in the tragedy which Thespis had introduced. He no longer sanctioned the ludicrous diversion in which Bacchus and the Satyrs only were personated; but he derived the subjects of his plays from the graver parts of the 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' (Μιλητῶν ἔλεγχον), referring to an event which took place n.c. 494, five years after Aeschylus won his first prize, is particularly mentioned by Herodotus (vi. 21).

He relates that the poet meditated the spectactors into tears by his vivid picture of the sufferings of their Ionian brethren. It may be presumed that his 'Phoenician,' which won the prize n.c. 476, was marked by equal if not superior excellence. Phrynichus was highly esteemed by the name of Phrynichus in such a way as to show that he was esteemed a poet of no ordinary powers. But Phrynichus did not invent the dialogue; he had only one actor; and the chorus, from which the oratorical, the choral ode still constituted the chief part of the performance. The improvement of first adding the dialogue and shortening the chorus is due to Aeschylus; Phrynichus first introduced female parts. No fragments of Phrynichus are extant. (Suidas, Lexicon; Bentley's Philidor; Müller's Hist. of Greek Literature.)

PHRYGICUS OF ATHENS, a comic poet, who flourished n.c. 430. Ten comedies of his are mentioned by ancient writers.

This poet have been collected by Hertelius and Grotius. He is once quoted by the Phrynichus who forms the subject of the next article.

Phrynichus (called Arhabius by Photius; and by Suidas, the Sophist of Bithynia), flourished under the emperors M. Aurélius and Commodus, from a.d. 170 to 190. He has left a work entitled "A Selection of Attic Epigrams," in which he has collected 650 epigrams and 785 verses, vii. 5. The work was first printed with the annotations of all the preceding editions, and is enriched with many original remarks. A fragment of Herodian, the grammarian, upon the same subject, accompanies the work of Phrynichus. Lobek has added six dissertations (which he calls Parerga, 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 close the volume, which is extended to 841 pages, besides eighty pages of preliminary matter. (Photius; Suidas; Fabriæ.)

PITHISIS (a Greek word, πίθις, signifying 'corruption,' 'decay,' which is frequently used as a metaphor to signify a 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 Pithisis Hepática, P. Mesenterica, P. Pulmonaris.) 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 are exempted, is a long journey in life in the land of death. There are no drugs of whose ravages extend even to the brute creation, and whose 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 it by no means proceeds slowly. It is now a matter of common knowledge by a knowledge of those influences which most frequently give rise to it that we can hope to attain our object.
peculiar to Pthiosis is 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 sometimes abundant; and immediate cause of great disturbance, 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 enduring damage which occurs in Pthiosis consists in the development of tubercles wherever they may be found; but as it is in the lungs that they first and most frequently manifest themselves, we shall describe them as they are seen in those organs. Tubercles of the lungs first appear as macules of a transparent straw-yellow color, 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, besides themselves into the bronchial to the bronchial trunks 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 concommittant 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 of calcification, of all other organs. The pustule or exudation 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 be expected to recur at various stages above described, and give rise to all the symptoms of confirmed Pthiosis; 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 Pthiosis, has, with one exception, never observed them in any organ without their arising in the lungs, so that one regards their presence in these 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 72 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 lesson which is met with in phthisis is ulceration of the intestinal canal, and this is met with at an exceedingly early age in the adult, and even in the child, but they all present specific 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 remarkable underdevelopment of the heart. In compounds pathologists have given the name of "Feue Grass," or fatty liver. Lastly, ulcerations of the epiglottis, larynx, and trachea occur so frequently, and with such uniformity of type, as to justify 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 Pleurae; 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 cause of coughing and expectoration.

Symptoms of Phthisis. — These generally commence with 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, and 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 slight result from the head, often attended with faintness or indisposition; and frequently 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 inflammation of the mouth or pharynx, caused by a runny nose.

In the second stage of Phthisis the cough becomes more frequent, especially during the night, and if 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 spueta are streaked with dull yellow lines; and hemoptysis is very frequent, but in general not copious. The mouth is more torrid; the fever is greater; and the perspiration on the head visible; the skin is rough, the loins are more copious, pains in the thorax, denoting pleuritic inflammation, often occur; and the languor and emaciation still increase. At the last stage of consumption there is nearly always profuse diarrhoea, and the sweats and expectoration are more copious: the latter becomes more uniform in composition, and is separated into roundish distinct masses, with foetid edges. The emaciation and debility keep pace with that of the other symptoms; and the patient, after a few evening: the appetite generally declines in the same proportion, and the patient dies in the extreme degree of maimamus, not unfrequently flattering 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 morbid phenomena. Thus, tubercles may be developed in the lungs, and remain for a considerable period without exciting either cough or expectoration of any degree: or, on the other hand, without such phenomena may give rise to intense general symptoms; as fever, 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 which is remarkable for the remarkable degree of appreciable organic alteration in organs whose functional derangement was most violent; while the only visible result of an affected 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 by the general term consumption, and comprehends all those cases in which the progress 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 the signs of consumption are most prominent; and which the stethoscopic signs are least evident. We shall therefore be more particular in enumerating the indications at this period, in an accurately describing the acoustical phenomena which are characteristic of the disease. As bronchitis is the disease with 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 elapse 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 pain, 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. Hemoptysis, from the commencement or during the progress of bronchitis, is not found, but in a considerable proportion of phthisis, there is not the presence of fluid in the bronchi, as in the case of bronchitis. Thus the expiration, which in health is scarcely audible, becomes more distinct; the voice more powerful; the respiration is deeper; and the alterations in the respiration and in the signs produced by percussion, 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
The mean duration of 314 cases exhibited by this table is 23 months, including the extreme cases; but 162, 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 15.5 per cent. of the total number of deaths, or 3,652 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 varies from 110° to 64°, and in winter from 75° to 32° in the course of a few hours; it is only 34°. Promising 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>British</td>
<td>10.4</td>
</tr>
<tr>
<td>African</td>
<td>7.9</td>
</tr>
<tr>
<td>Cape Town</td>
<td>7.6</td>
</tr>
<tr>
<td>Mauritius</td>
<td>7.4</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>5.8</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 here be 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>British</td>
<td>6.4</td>
</tr>
<tr>
<td>African</td>
<td>8.9</td>
</tr>
<tr>
<td>Cape Town</td>
<td>9.7</td>
</tr>
<tr>
<td>Mauritius</td>
<td>10.6</td>
</tr>
<tr>
<td>UNITED KINGDOM</td>
<td>12.5</td>
</tr>
<tr>
<td>GIBRALTAR</td>
<td>33.1</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 74,850 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.

---

### 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>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td>12</td>
</tr>
<tr>
<td>5</td>
<td>11</td>
<td>14</td>
</tr>
<tr>
<td>6</td>
<td>9</td>
<td>18</td>
</tr>
<tr>
<td>7</td>
<td>9</td>
<td>18</td>
</tr>
<tr>
<td>8</td>
<td>9</td>
<td>14</td>
</tr>
<tr>
<td>9</td>
<td>7</td>
<td>12</td>
</tr>
<tr>
<td>10</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>11</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>12</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>13</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>14</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>15</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>16</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>17</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>18</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>19</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>20</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>21</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>22</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>23</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>24</td>
<td>8</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Years</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td>9</td>
<td>1</td>
</tr>
<tr>
<td>10</td>
<td>1</td>
</tr>
<tr>
<td>11</td>
<td>1</td>
</tr>
<tr>
<td>12</td>
<td>2</td>
</tr>
<tr>
<td>13</td>
<td>1</td>
</tr>
<tr>
<td>14</td>
<td>0</td>
</tr>
<tr>
<td>15</td>
<td>1</td>
</tr>
<tr>
<td>16</td>
<td>4</td>
</tr>
<tr>
<td>17</td>
<td>5</td>
</tr>
</tbody>
</table>

114 + 200 = 314

---
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 greatest in the first than in the second period.

Died of phthisis at the following ages:

<table>
<thead>
<tr>
<th>Age</th>
<th>Death Rate</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 to 20</td>
<td>10 to 21</td>
<td>11</td>
</tr>
<tr>
<td>20 to 30</td>
<td>39 to 62</td>
<td>33</td>
</tr>
<tr>
<td>30 to 40</td>
<td>43 to 76</td>
<td>23</td>
</tr>
<tr>
<td>40 to 50</td>
<td>12 to 77</td>
<td>5</td>
</tr>
<tr>
<td>50 to 60</td>
<td>8</td>
<td>8</td>
</tr>
</tbody>
</table>

In respect of sex, consumption destroys more females than males, in the ratio of 4:15 to 3:771. This includes the whole of England and Wales, but in that of the counties of Cornwall, Devonshire, Dorsetshire, Susses,

shire, and Wiltshire, whose estimated population at the same period was 1,723,770.

Died of phthisis from July 1st to December 31st, 1857, in the metropolis, whose estimated population on the 1st of October was 6,696,191, and in the districts of Aston,

Bath, Birmingham, Bristol, Cambridge, Carlisle, Clifton, Derby, Dudley, Exeter, Leeds, Leicester, Liverpool, Manchester, Maidstone, Newcastle-on-Tyne, Northampton, Nottingham, Salford, Stafford, Stoke-on-Trent, Sunderland, Wakefield, and West Derby, whose estimated population at the same period was 1,765,710.

These tables point out generally the influence of occupation in the production of phthisis. In cities the majority of the cases were among the poor, engaged in the arts, trades, and manufactures, and generally for many hours together in ill-ventilated apartments, and in unhealthy posture of body. In the country the pursuits of the same class, though less fatiguing, were equally attended with the use of unwholesome air, and the effects of dampness and moisture, which have been successively tried for the purpose of arresting the metallic particles. In the cases of 887 quarriers, 557 stone-cutters, and 160 marble-workers, all defending them occupying the inferior apartments of the bell. Benoist found the proportion of phthisis was less than the general average; but these are employed carried on in the open air. Mr. Lombard, whose researches are founded on a total of deaths from phthisis, and 5,372 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 Wenlockhead, a mining district, informs us that, out of 74 men working during four successive months for six hours daily in persons daily if they are burnt with difficulty, not one was attacked with any pulmonary 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 high. The pulmonary disease caused by this disease in Cornwall exceeds that of the females in the ratio of 170 to 140, and in the mining parts of Staffordshire, Shropshire, and Worcesters, in the ratio of 203 to 191; while in the north of this country and in Shropshire, and in the county of Cheshire, the ratio is 656 males to 756 females.

The influence of smoke, when uncombined with other agents of injury, may, we think, fairly be called in question. In Lancashire inliers, which are, in fact, the most 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 consumption, those which determine the deposition of tubercles, have usually been attributed to irritants acting locally on the bronchial tubes or on the lungs, whether occasioned by inflammation of these parts or by the mechanical action of inhaled noxious substances. The result of the latest investigations on this subject leaves no doubt that the influence exerted in this way has been greatly exaggerated. Pneumonia and bronchitis, the two diseases hitherto regarded as the most frequent forerunners and producers of phthisis, have been shown by M. Louis to exercise no material influence in its production than any other disease. They may indeed occasionally hasten the development of tubercles, but they exert no specific effect, and they act only as remote causes in the production of the disease. The conclusions of Louis, which have been derived from his own observations in hospital practice solely, receive ample confirmation from the admirable Statistical Reports of the Registrar-General and Mr. Titchmarsh, which we have before referred to. The popular error of ascribing 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 tubercular lungs. With regard to mechanical irritants, as dust of various kinds, noxious gases, smoke, &c., 'no opinion has been more prevalent,' observes Dr. Cowan, 'than that those are the causes of the inhalation of vegetable, mineral, or animal substances, are peculiarly liable 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 natural or more reasonable than to remove 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 conviction 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, which is usually brought forward as evidence of the injurious influence 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 artisans 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, as is generally believed, by the use of protective or irritative preparations, such as the inhalation of tincture of chang. The fact is, that all these 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 phthisis.
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:—

**Annual Deaths to 100,000 living.**

<table>
<thead>
<tr>
<th>City</th>
<th>Deaths</th>
<th>Mortality Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leeds</td>
<td>401</td>
<td>49%</td>
</tr>
<tr>
<td>Birmingham, Manchester, Liverpool, England</td>
<td>510</td>
<td>49%</td>
</tr>
<tr>
<td>Hull</td>
<td>402</td>
<td>49%</td>
</tr>
<tr>
<td>Plymouth</td>
<td>670</td>
<td>56%</td>
</tr>
<tr>
<td>385</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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 then must be attributed to the injurious effects of the occupation, that cannot be expunged from 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. It would not however be fair to omit the mention 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 Dupuytren, that he brought into the Hands of Dr. Dieu for 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, full crop of tubercles occurred.

A moist and changeable climate has been regarded historical 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 a nursery for phthisis, that calls for the attention of those 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. How far the inhabitants are in a severe scrutiny; and the evidence which 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 catarrh and coughs, and consequently consumption. We need scarcely allude again to the fallacy of this opinion. We have seen the possession of large possessions, as a marked distinction of the mode in which climate operated to the production of phthisis. That the disease prevails to a much greater extent in some cliques and localities than in others, is an indisputable fact; but it is no less certain that its prevalence is not confined to 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 institution which is a protection from consumption; and he says that in countries where one prevails, the other is almost 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, and the fever prevalent in the interior is a desideratum; and as respects the immunity enjoyed by persons exercising the trades just enumerated, it will be observed that they are all of them employed combining considerable muscular exertion with free exposure to the air. The prevalence of this class of occupations is generally such as to place them above want. Is phthisis contagious? This is a question which has been often discussed, and numerous are the testimonies both on the affirmative and negative side; but the weight of the evidence seems to rest with the non-contagionists.

**Treatment of Phthisis.**—This resolves itself into two kinds: first, the prophylactic, or that which has for its object the prevention of phthisis in those who are hereditarily disposed or otherwise exposed to the disease; and secondly, the curative, or that which endeavours to arrest its progress after tubercles have manifested themselves. Much may be done in the first case; but experience proves the limited control we exert over the processes of it in its early stage. Phthisis, as we have said before, and as we are anxious to impress this fact upon our readers, we again repeat—is not a mere local disease, or one arising from local causes: but it results from a general depravation or unhealthy condition of the whole system. It is not possible, therefore, to consider it as the last of the embryonic changes previous to the nascence of the disease in a cognisable form.

This being premised, our prophylactic treatment must be directed towards the prevention or the arresting of the incipient changes which take place previous to the development of tubercles. With this view the most obvious rules are, to avoid all those causes which we have pointed out as tending to produce the tuberculous diathesis. Marriages should be made with greater regard to the health of the contracting parties. Children, especially if sickly, should be reared and educated with less anxiety about their mental progress than their bodily strength. Those professions and amusements are to be avoided in which sitting, with a confined posture of body, as that of tailors, shoemakers, milliners, lacemakers, engravers, jewelers, watchmakers, clerks, &c., all of whom are peculiarly exposed to attacks of phthisis. Carters, coachmen, sailors, &c., are remarkable for their general health and their freedom from this complaint. All occupations therefore that are carried on in the open air should be chosen in preference to those of an opposite kind. Callisthenic exercises are those in which healthy, and should by no means be neglected. In short, everything which tends to invigorate the body diminishes disease; and it is proved by statistical facts, that wherever one of these exercises is indulged in with moderation, the mortality from phthisis is also low. The curative treatment of phthisis consists in regulating the health generally, and in combating particular symptoms. For the attainment of the first object, the diet should be nutritious, but not stimulant; and the exercise regular, but gentle, and not too prolonged. Horse exercise is particularly recommended in the incipient stage of phthisis, and travelling may be safely indulged in in certain circumstances. Of all the more usual means of travelling, the voyage is perhaps the most conducive; and where much improvement has taken place during the voyage, it would be better to repeat it than hazard the doubtful benefit of a residence on land. The influence of climate on consumption is generally acknowledged, and it is only to be derived. 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, oeteris peribus, we think 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 much more than neutralise this advantage. Examples of the mortality from phthisis in many countries which are remarkable for the equability 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 is in a general and constant climate, has the least; and where much improvement has taken place during the voyage, it would be better to repeat it than hazard the doubtful benefit of a residence on land. The influence of climate on consumption is generally acknowledged, and it is only to be derived.
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 has in a great measure checked the necessity of this mode ... and is, in the general treatment of phthisis, emetics must be first mentioned. It is remarkable, says Dr. Young, that a very great majority of the eures of consumption related by different authors have either been performed by emetics or by de- cussing the patient in a state of feeble health. The chief of the symptoms 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 effects upon the nervous system, and the subse- quent diaphoresis, all point out that the action of vomiting is general and complicated; and, associated with the benefits resulting from sea-voyages, swinging, &c., there is every reason to believe that the use of emetics in inceopt 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 must be beneficial in phthisis, and there can be no doubt that their tonic properties, when not contraindicated by the existence of inflammation or much febrile excitement, may safely be put in requisition in the treat- ment of the disease. This is a case of a 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 produc- ing constitutional diarrhoea, nor is it necessary to bleed the patient. They are checked by exhibiting acids. 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 generally too hot, should be kept cool; gentle counter-irritation may be made to the latter, and small doses of rhubarb 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 deploratory measures which may be thought necessary, the original disease upon which they depend must not be lost sight of. One whole, local bleeding by leeches or cupping is preferable to venesection, and counter-irritation to both. For a full ac- count of hemoptysis and its treatment, see ΗEMOPTYSIS.

Butter. The Vegetable Butter of Almea, is one of the produce of the chooree, or butter-tree (Buxus butyracea of botanists) of Kumaon, in the eastern district of which it grows. It is peculiarly abundant in the adjoining Goorkhaloo province of Deora, 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 in the production of the true ghee. Mr. T. J. G. Sal- son in Kumaon, used it for this purpose in preference to coco-nut oil. This substance has been analysed by Mr. F. Solly, who describes it as existing in the solid form at ordinary temperatures and at a temperature of 10 or 12°, it is perfectly melted, and appears then as a pale yellow oil. A specimen 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 liquid oil, and six of vegetable impurities. See BARTLES, for a description of this vegetable. It is very common in British India. See Commerce and Agriculture of Royal Asiatic Society, 1839.

PHYLLOSTREPHUS, Mr. Swainson's name for a genus of Mereulidae, placed by him in a subfamily Brachypyr- dinae, or Short-footted 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 dead 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 Micros, Sw. (Classification [vol. iii. p. 121].

PHYLIDIDAE, Latham's name for a family of Gase- tropodous Mollusks, including the genera Phyllidia, Chetellia, Chiton, Patella, Patellolida, and Stepharia.

M. Deshayes, in the last edition of Lamarck, observes that zoologists have been surprised to find in the collection of the genus 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 'Rigo Animal,' he remarks, Cuvier formed at the end of his Asteropepa a small family under the name of Cyclobranchians, in which he places the Chitons and Limpets, whilst he arranges the family of In- ferbranchians, containing the Phyllidae and Diphyllidae, at the commencement of the order of the Gastropodes. Nevertheless it may be said, with reference to the disposition of their branchiae, that these last two genera are as much Cyclobranchians 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 Inferbranchians was augmented by the genus Umbrella, and the order of Cyclobranchians was divided into two families, the Limpets and the Chitons. M. de Blainville (Mammalogist) proposed another distribution of the Cyclobranchians, including the Asteropepa. The former zoologist re- tained the Inferbranchians, of which he reserved the family of the Umbrella; and the Asteropepa, towards the end of the Monocious Mollusks; but considering the Chitons as a type intermediate between the Mollusks properly so called, and the Cuvierioidea, he made in his arrange- ment a sub-type, the Asteropepia, containing the Umbrella and the Asteropepa. We may therefore consider that in the assemblage of these two kinds of animals, dividing them into two classes, one of which, the Polyplazaphora, was for the Chitons. With the exception of M. de Blainville, the opinions of other naturalists may be referred 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 considered as classed by Lamarck in his family Asteropepa ought to be separated; for some, as Chitonellus, Chiton, and Patella, are hermaphro- dites; others, the Phyllidiidae namely, are monocious.

PHYLLODIUM is that organ which in the greater part of the New Holland, Acaelia, or wattle-trees, stands in the place of leaves. When such plants are young, they are clothed with the pinnated leaves, characteristic of the Acaelia of extra-Australian countries; but the leaves soon drop off or cease to appear, and the petals enlarge from a linear connection into a rounded lamina, the linear expansion which presents one of its edges to the sky and the other to the earth. That expansion is the phyllodium, which is therefore a peculiar modification of the petiole, whose surface is extended in order to increase the diminution of respiratory and digestive power consequent upon the loss of the leaflets by which those functions would be otherwise performed.

PHYLLOPDA, Latreille's name for a section of crus-
taceaus which have the head confounded with the trunk; the eyes sessile, smooth, and closely approximated; a delicate buckerl formed of a single piece, and free posteriorly, serving as a crust or shell; two homy demi-circular mandibles, with a compressed, straight, and very dentipointed apex; first joint of the hand in the form of a osa, and terminated by articulated bristle-like appendages; the others branchial, and more than sixty (pairs) in number, disposed for swimming.

The genus Scopoli (Binoclus, Geofr., Leach, Linn., Mull, Linn., Monolocus, Linn., Fabr.) will serve as an example of the Physloidea. (Binoclus. N.B. The printer has reversed the cut, and placed the tail uppermost.)

Physlosoma. The family of Double-calciarized Crus
taceaus (Bicircrasta), is composed of forms which are very remarkable for their rounded shape and the transparency of their teguments. 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 placed horizontally, and to the existence of these two bucklers, so to speak, they owe the name (Bicircrasta) given to them by Latreille. The ophthalmic 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 mandible on the same transverse universal 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 consists of the second pair of mandibles, in the middle third of the lower surface of the carapace; it has the form of a rounded tube, and is composed essentially of a large upper lip, a pair of hooked mandibles which want a palpiiform stem, a membranous and bilobated lower lip, and a pair of jaws, sometimes there are to 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 cephalothorax, presents no annular 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 flat bare pedunculated, which is not very analagous to the external branch of the thoracic feet of the Mystias, but which takes its origin much farther from the body. The abdomen is slender, and sometimes rudimentary; in general, nevertheless, it is terminated by a fin composed of a few thin and delicate lamellar appendages, which are to be distinguished from the pinnules of the Cardioida. The false feet are always more or less rudimentary.

These crustaceans do not present any organs which can be considered as branchiae; some naturalists give this name to the ciliated appendage which represents the palp of the thoracic feet, but without resting this conclusion on any fact; and M. Milne Edwards is disposed to believe that inspiration is carried on by means of the general surface of the body. (Histore Naturelle des Crustaces.)

M. Milne Edwards, whose definition of this family we have just given, makes it consist of two genera only, Physloida and Amphion. He observes that the Phyllosoma are easily recognized by the large plate, which leaves part of the thorax exposed. In Amphion, the carapace hides the thorax entirely.

Physlosoma. (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 teguments of the upper and lower surfaces, so that it is difficult to distinguish how the animals move. 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 oval, but without appendages to the thorax by its central portion, so that the borders all round are free. This peculiar form of bucker 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 peduncules. The internal antennae spring equally from the border of the carapace, immediately outside the ocular peduncules; they are very small, and present a peduncule composed of three cylindrical joints and two terminal filaments. The second pair of antennae is very small, and consists of a single joint, 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 only prolongations 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 at the extremity, and armed internally with two teeth, and edges and a small tooth. The lower lip is large, very apparent, and deeply bilobated; 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 bucker like the feet. The jaws of the second pair are represented by a lamina or blade, which is sometimes rather large and oval, sometimes entirely rudimentary. A pair of tubercules, situated a little behind those last appendages, are the only vestiges of limbs, which otherwise do not exist in this genus.

The thorax is lamellar like the carapace, and constitutes a second bucker, the anterior portion of which only is covered by the first of these foliaceous disks. It is in general composed of a single plate, but the second pair of appendages presents 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, sometimes they give origin from the extremity of their last joint to a flagelliform palp. The five or six succeeding pairs are very long, and sufficiently similar to each other; like the first pair, they are cylindrical and unguiculated. The middle third of the shell presents 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 multiarticulate 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 as if they had been cut off; the second pair of feet end in a slender and elongated joint, 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. At the base of the antennae, a pair of eyes, from which, in some animals, 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 segments, and perfectly distinct from the thorax which covers its base; sometimes it is confounded with the bucker, and only seems to be a prolongation of it. In this last case it varies still, for sometimes 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, one of which is the most prominent 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 Sense Organs. The nervous system of the Phyllosoma presents a remarkable mode of conformation; the mass formed by the cephalic ganglion is situated near the base of the antennae, and communicating with this are there two 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. The cephalic ganglion are to be perceived a great number of vessels which diverge laterally. M. Milne Edwards observes that M. Guerin thinks that these vessels 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 Mediterraneum* appears to have been the only European species known, till Mr. P. 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 a 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 b: 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 Sarmense*.

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 Phyllosomatids.

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 *Cartiola* and the *Amphion*, for their abdomen, though flattened, much resembles that of the Shrimps (*Salicoeae*). The cephalic bucker is oval and very much elongated. The external antennae are setaceous, very long, in general divided into many joints and without a dilatation of an auricular form at their base. The two first pairs of feet, which correspond to the jaw-feet of the second and third pair in the Decapods, carry a flabelliform palp. 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 communis*.

**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 antennae stylinform, much longer than the ocular peduncles, and composed of five joints (without reckoning the peduncle which is on the tip of which is on the orifice 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.

P. C. No. 1119.

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 feet (for jaw-feet 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 scarce 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.

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 Phyllosomatids.

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 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 antennae is equally characteristic; these appendages are shorter than the internal antennae, 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 laeticornis* and *Phyllosoma brevicornis*, the eyes and antennae of which are represented below, are examples of this section.

3. Broad-tailed Phyllosomatids.

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

Vol. XVIII.—9
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 arched 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 first two pairs want the bladeiform palp, as in the Phyllosoma of the Mediterranean. The thorax, as a whole, is of a form that is not very different from the abdomen. The abdomen is terminated by a fin consisting of five rather large blades; but the false feet of the preceding rings are rudimentary.

Amphion (M. Edwards.)

M. Mille Edwards states that the crustacea which he has designated under the name of Amphion approach nearer to the Phyllosoma than any of the other Stomopoda, but in some respects they resemble also the genera Alita and Mysis, and he is of opinion that they establish the natural passage between these animals. Their cephalic buccula or carapace is foliaceous, like that of the Phyllosoma, whilst the form of the abdomen and the caudal fin is that of Mysis.

The cephalic buccula 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 bears a ring which encircles the eye through the same one eye, there is no trace of a rostrum, but on each side the single form performed by the union of this border with the lateral border is prolonged forwards after the fashion of a spine. The posterior border is composed of three sinuses and two caudal joints, which is short, and 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 is very long, but the crustula is extremely short. The internal antennae are inserted on the same line, immediately below and behind the ocular peduncles. The first pair have the general form as in the Phyllosoma; their basilar portion is composed of three sinuses and two caudal joints, 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 basilar 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 Alita, but, instead of being directed downwards, they are strongly deflected forward. Their first joint, which is not very distinct, 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 basilar portion of the internal appendage, and anteriorly to the external appendage, its external border is terminated by a spine. The stem is composed of two small very short basilar 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 buccula a small round tuberous, from the posterior part of which the thorax springs. The parts which enter into its composition are a labrum, two mandibles, a tonguelet (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 tonguelet, which is bilobated. The jaws (first pair) are nearly rudimentary, and appeared to M. Mille Edwards to consist only of a small horny blade, the border of which is bilobated. The second pair are composed of two joints, the first of which presents internally a prolongation furnished 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 bucal apparatus, are, on the contrary, here very much developed and applied upon the jaws. Those of the first pair present within many tonglets furnished with hairs at their extremities, and on the external side of the case with a large foliaceous and oval appendage. The jaw-feet of the second pair are much more developed than the preceding; their basilar joint is lamellar, and carries on its anterior part, ist, a cylindrical cone composed of three joints; and, a bladeiform palp, or a species of joint, 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 joint of the cephalic buccula, and the slender branched crustaceae; the whole are slender and cylindrical, and at the extremity of their second joint springs a papilloform appendage, composed of a cylindrical joint terminated by a cutaneous disk, and elided bristles. There are three pairs of these appendages in the cephalic buccula, two on each side, and one that are larger and more developed than the others; and each presents itself forward by a sharp spine. The three succeeding pairs of feet become progressively longer and longer, and appear to be those of their 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 Stomatopoda, and is terminated by a single disk, or a 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 eyes are situated at sea in the Indian Ocean by M. Reynolds, naval surgeon. Its length is about an inch, and its teguments, with the exception of those of the abdomen, are diaphanous. (Historia Naturale dei Crustacii.)

PHYS. [LIMNEANS, vol. xxxi, p. 480.]

PHYSALUS. [PHYSOGRADES.]

PHYSETER. [Whales.]

PHYSIC 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 Baghlabinda. The seeds are violently emetic and drastic, in large doses energetic poisons; 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 Medica, No. 375, p. 184.)

PHYSICIAN (ά μηεθις), a word derived from φημα, nature, 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 ϊς ηθεν, or those who examine particularly into the mystery of the mind of man. In English however the word physician is used only to designate the professors of the healing art, called in Greek χαράκτης, and in Latin medicus; while in most (if not all) other European languages it was more elated, and had in its original meaning, and the idea of healing is expressed either by some native word or from 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 last part 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 of the different species of 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, we find a law at Athens under which the magistrates should practise it (Hyginus, Fab, cap. 637); Celsus mentions one of the laws of Zaleucus among the Epizephyrian Locrians, by which it was ordered that if any one during his term of office as a provincial procurator, wine contractor, or physician, 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 medals struck by the people of Smyrna in honour of different persons belonging to the medical profession. (Dion. Halicarn. Disertatio ii. Smyrneis in Medicorum Honorem percutiis, 4to, Lond.)

 Somewhat analogous to this is the use of the Arabic word Ḥakam (from ḥakama, n. fecit, couples hit), which properly means a wise or learned man in general, but is very frequently used in a restricted sense to signify a physician,
PH Y 131

1724.) If the Decree of the Athenians (published among the letters of Hippocrates) be genuine, and if Socrates (in Vitae Hippocr.) can be depended on, the same honours were conferred upon that physician as had before been given to Hippocrates. Hence, we must look for the Athenians into the Eleusinian mysteries, and maintained in the Prytanæum at the state's expense. (See also Pliny, Hist. Nat., lii. vii., cap. 37.) Some idea of the income of a physician is obtained from a passage in Herodotus (lib. iii., cap. 131), that the Aginétans (about the year a.C. 582, O1. 62) paid Democedes from the public treasury one talent per annum for his services, i.e. (if we reckon with Hussey, Antiqu. Weights and Measures, &c.) the Aginétans (at the rate of £15 13s. 4d.) not quite under forty and hundred and forty-pounds; he afterwards received from the Athenians one hundred mints, i.e. (reckoning with Hussey, the Attic drachma to be worth £4 16s. 4d.) rather more than four hundred and six pounds; and he was finally attracted to Samos by being offered by Polycrates a salary of twenty talents, i.e. (if the Attic standard be meant) four hundred and eighty-seven pounds, ten shillings. It should however be added that Vulpæknaeus doubts the accuracy of this statement of Herodotus with respect to the Aginétans 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 drachmas of silver (of the Attic weight) per annum. (Aristoph., Acharn., v. 66.) It seems to have been not uncommon in those times (as afterwards in the later Roman empire, see Archiattia), for states to maintain physicians, and to have doubtless exercised a great influence in the promotion of the science. (See Memor. Soc., lib. iv., cap. 2; &c.; Plato, Gorg., § 23; Strabo, lib. iv., p. 125; Dio. Sic., lib. xii., cap. 13); and those again had attendants, for the most part slaves, who exercised their calling among people of low condition. (Plato, De Leg., lib. iv., p. 720, ed. Stephan.; Boeckh's Publick Econ. of Athens, vol. i., p. 160.)

In the earlier times of the Roman republic physicians were unknown (Pliny, Hist. Nat., lib. xxix., cap. 5, ed. Taylor). According to the medical profession of that age, the office of physician was in a great measure confined to persons of service rank; for the riches 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 Medicorum apud Romanos degentia 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 pirates at the island of Pharmaca (Sueton., cap. 4), and who is called his friend by Plutarch (see Cassaubon's Note on Sueton.); Archiattia, who, being the first foreign surgeon that settled at Rome, had a share in the interest of the emperor, and was well acquainted with the Jus Quiritium, A. D. 553, B.C. 319 (Cassius Hemin ap. S. Pliny, Hist. Nat., lib. xxix., cap. 6); Artorius, who is known to have been a physician (Cass. Aurel., De Morb. Antiq., lib. ii., cap. 10); and at Rome so practiced (in a certain and political capacity) the physician of Augustus (Plutarch, Vita Brut., cap. 41, ed. Tauchn., where however it should be noticed that some editions read 'Artefrayus instead of 'Artefrayos'); Asclapo, whose Ciceron calls his friend (Epist. ad Dresc., lib. iii., cap. 20); Asclepiades, the friend of Cressus the orator (Cic. de Orat., lib. i., cap. 14); Eudemos, who is called by Tacitus (Annal., lib. iv., cap. 3) the friend and physician of Livius; and others. With respect to the income made by eminent physicians, we have been informed by Pliny (Hist. Nat., lib. xxix., cap. 5) that Albinus, Arruntius, Calpetaurus, Cassius, and Rubinius gained two hundred and fifty thousand sesterces per annum, i.e. (reckoning with Hussey the Attic mille nummi: (sestertium) to be worth, before the reign of Augustus, 8s. 17d.) about two thousand two hundred and thirteen pounds, ten shillings; that Quintus Stertinius made it a favour that he was content to receive from the emperor only the dea of his fee (i.e. the proportion for the attendance of the physician, rather more than four thousand four hundred 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 wife had the same income (in accordance with the different practice of the age) from the emperor Claudius, left between them at their death, notwithstanding 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 Archiattia, which is generally supposed to have been an emanation of the Prytanæum.

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 apostolised to the faith of his family. From these it is probable those who seem to have been in a manner hereditary, as in that of Avenzoar (Jon Zohir), five of whom successively belonged to it. (Reiske's Abulfeber Annae Musulm., tom. i., p. 659.) The qualifications necessary for practising medicine seem to have been the following: a high, till then unknown, fee for a hundred and thirty-nine (A.D. 937), in consequence of an ignorant practitioner's having killed one of his patients, passed a law that no one should be allowed to practise until he had been licensed to do so by the chief physician. (Graec. Bibl., Arabico-Hisp. Escr., tom. i., p. 458.) Some ideas of the consideration in which the Arabic and Moorish physicians were held may be gained from the fact that Sancho the Fat, king of Leon, was obliged to go in person to Cordova, A.D. 956 (M. H., 345), to be cured of an illness. (Mariana, l. viii., c. 7, tom. i., p. 318; Conde, Dominc. des Arabes, t. i., p. 448.)

The first medical school that was established in Europe was that at Salerno (Salernitana Schola) towards the end 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 munificent to their teachers, maintaining them in great luxury, and regularly paid them a salary. (S. Pliny, Hist. Nat., lib. xxix., cap. 5; &c.) The Moorish physicians were under the superintendence of the Caliph, and were paid from the public revenue. (Institut. Arsent. Escr., tom. i., p. 448.) They were placed in the highest rank, and strictly united to the sovereign; to touch a physician was considered as a degradation. (Institut. Arsent. Escr., tom. i., p. 448.)

The first medical school that was established in Europe was that at Salerno (Salernitana Schola) towards the end 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 munificent to their teachers, maintaining them in great luxury, and regularly paid them a salary. (S. Pliny, Hist. Nat., lib. xxix., cap. 5; &c.) The Moorish physicians were under the superintendence of the Caliph, and were paid from the public revenue. (Institut. Arsent. Escr., tom. i., p. 448.) They were placed in the highest rank, and strictly united to the sovereign; to touch a physician was considered as a degradation. (Institut. Arsent. Escr., tom. i., p. 448.)
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 four colleges to be repose in the university, and united in the person of a charter of that king. [PHYSICIANS, COLLEGES OR.] Under this the university graduates who might desire to practice 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 pre-eminence is that of the physicians. They are (by statute 2 Henry VII.) allowed to practice in medicine 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 in medicine. These privileges are also reserved to them 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 the former, that his 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 entrance into these universities; it is therefore 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 completed twenty-eight terms 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 be 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 ancient medical writers, viz. Hippocrates, Celsus, Aretaeus, and Galen. After taking the degree of Bachelor of Medicine, the following licences to practise is delivered to the candidate, under the common seal of the university:—

'Cancellarius, Magistri, et Scholarum Universitatis Oxoniensis dielico nobis in Christo, — Baccalaurae in Medicinae scientiam legum, et literarum humanitatis, in Domino semperprofum. Cum omnia nostra studia, consilia, et actiones ad Dei gloriam et fratum salutem refertur debere; cumque Medicina ad hanc, ad reliquis facultates, plurimum conuenit; hinc est, quod nos Cancellarius, Magistri, et Scholarum antiqui et moderni, in saeculis huius temporis, in medicina, philosophia, theologia, litteris, et omnibus scientiis, in Deo nostro nostro Jacobo, et omnibus suis fidelibus, ad aeternum in remissionem, perficiendum.'

'Quorum omnium majores sedem et plenius testimoniun, sigillum Universitatis Oxoniensis communem, quo habet parte ultima presentibus apponi fecimus. Datum in Domini sexto die mensis octobris a. d. M. 1532, et regni Domini nostri nostri Jacobi, &c. primo.'

For the degree of Doctor of Medicine, the candidate is required to have completed forty terms from the day of matriculation in order to receive a public examination at the schools a dissertation on a subject, to be approved by the Regius Professor, to whom a copy of it is afterwards to be presented.

At Cambridge, before he can proceed to the degree of Doctor of Medicine, a candidate must have passed the examination in the preceding subject on the sixteenth term, while in the other universities, the student has passed nine terms, and has 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 1537, the degree 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 the year 1842; after that time it will 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 an expense of one hundred pounds in 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 of Medicine, and of having subsequently 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, midwifery, surgery, medicine; of having dissected during nine months; of having attended a course of practical chemistry; and of having attended practical pharmacy. Candidates to be examined in anatomy, physiology, chemistry, botany, materia medica, and practical 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 and having subsequently attended a course of lectures on each of two out 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 completed the atención practico at the end of twelve months, and certificates of having attended practical medicine at the 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 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 Doctor of Medicine.—Candidates must produce certificates: 1. of having taken the degree of Bachelor of 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 during the last six years in a recognised hospital or medical institution; (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 this university, 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 received a public examination at a recognised medical institution or school, as required by the charter of the university; 3. of moral character, signed by two persons of responsibility.

Degree of Doctor of Medicine.—Candidates who have been engaged to practice in medicine for the term of their profession, shall be admitted to the examination for the degree of Doctor of Medicine 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. Andrew's. In England, the body, the corporation of physicians which is there the same, confers the degree of Bachelor of Medicine. The degrees of Bachelor and Doctor of Medicine conferred by Trinity College, Dublin, rank with the same degrees respectively from Oxford and Cambridge, and are not acquired, in England, until the fourth and fifth years. For the degree 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 exonerated from serving on juries, from serving various offices, and from bearing arms. He is (according to Wilcock, p. 165) 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 amount of the 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) for each visit, and that when sent to the patient's house. For the treatment of a grave and serious disease, he demanded four hundred ducats per day, or about seventy pounds. (Bayle's Dict., art. 'Apone.') 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 other times, and others subsequently, 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 surgeon or apothecary, the purpose of recovering his fees, although he may in fact be a surgeon or apothecary, or a person who had no right to practise as a physician. It has likewise been determined that a custom in the defendant's neighbourhood to pay physicians at a certain rate of fee should not be taken as a basis for the action than in places where no such custom is known. (Wilcock, p. 3.) A physician however of great eminence may be considered reasonably entitled to a larger remuneration than that with the same effect, it has become publicly understood that he expects a larger fee; insomuch as the party applying to him must be taken to have employed him with a knowledge of this circumstance. (Wilcock.

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, Ferdinando de Victoria, Nicholas Halsewell, John Francis, and Robert Yaxley, that they, and all men of the same faculty of and in the city of London, and their successors, might elect and choose licensed physicians of the same community or college; and that the same community or college might yearly and for ever elect and make some prudent man of that community expert in the faculty of medicine, president of the same college or community, to supervise, observe, and govern for that year the said college or community, and all men of the same faculty, and their affairs, and also that the president and college of the same community might elect four every year, who should superintend the education, and be the officers of the said society, and that such physicians as shall be admitted into the said community, within the precincts of London. The statute (14 Henry VIII.) confirmed this charter, and further ordained that the six persons above named, choosing to themselves two more of the said community, should be called and elected electors; and that the same electors should yearly choose one of them to be president of the said community; and then provided for the election of others to supply the places of such electors as should in future be void by death or otherwise, which was to be made by the survivors of the same electors. The statute (32 Henry VIII.) provides that from thenceforth the President, Commons, and Fellows might yearly, at such time as they should think fit, elect and choose four persons of the said Commons and Fellows, either the best learned, wisest, and most discreet, or such as should think convenient, and have experience in the faculty of physic, to search and examine apothecaries' wares, &c. This last appointment is independent of the constitution of the more limited body, and is intended for the purpose; and it has been usual to select for this office the same four persons in whom the government of the physician is reposed by the charter and statute of the 14th of that king.

The constituted officers then of this corporation are the eight electors, of whom one is to be president, and four governors, who have generally born the name of censors. There is nothing to be gathered from the charter or statutes in any way tending to exclude any of the electors, except the president, from the office of censor; and as no duties are assigned to the electors, except those of filling up their own number, electing one of themselves to be president, and granting testimonials to country practitioners, they may be rather regarded as candidates for the office of president than as active officers of the corporation. The college is bound to choose four censors, for the purpose of confiding the choice of the Fellows to their choice. This choice is carried out by these officers. It is also incumbent on the electors to preserve their number, so that there may at no time be less than five, including the president, as they would not, after a further reduction, be capable of electing a new president or choosing the Fellows. (Wilcock, p. 36.) The year of the reign of Henry VIII., falling within that description, was entitled to be admitted into the association. Such of them as had availed themselves of this privilege, and their successors, are named by statute 32 Henry VIII., as Commons and Fellows' (quoted in Wilcock, p. 13). But as to the persons who should afterwards enjoy that distinction, the original charter and all subsequent statutes are silent. Jane and Charles II. granted charters to this body. The first is silent as to the mode of continuing it; but the charter of Charles, after limiting the number of fellows to forty, directed that when a vacancy should occur in that number, the remaining fellows should elect another; the former number of twenty is to be given to 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 certainly been several times acted upon. (Wilcock, p. 34.)

The licentiates of the college who may practise within the precincts of London and seven miles round it were (until 1836) of three orders, viz., Fellows, Candidates, and mere Licentiates. The last of these classes, generally 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 who have received an official licence to serve the common community or college; and that the same community or college might yearly and for ever elect and make some prudent man of that community expert in the faculty of medicine, president of the same college or community, to supervise, observe, and govern for that year the said college or community, and all men of the same faculty, and their affairs, and also that the president and college of the same community might elect four every year, who should superintend the education, and be the officers of the said society, and that such physicians as shall be admitted into the said community, within the precincts of London. The statute (14 Henry VIII.) confirmed this charter, and further ordained that the six persons above named, choosing to themselves two more of the said community, should be called and elected electors; and that the same electors should yearly choose one of them to be president of the said community; and then provided for the election of others to supply the places of such electors as should in future be void by death or

otherwise, which was to be made by the survivors of the same electors. The statute (32 Henry VIII.) provides that from thenceforth the President, Commons, and Fellows might yearly, at such time as they should think fit, elect and choose four persons of the said Commons and Fellows, either the best learned, wisest, and most discreet, or such as should think convenient, and have experience in the faculty of physic, to search and examine apothecaries' wares, &c. This last appointment is independent of the constitution of the more limited body, and is intended for the purpose; and it has been usual to select for this office the same four persons in whom the government of the physician is reposed by the charter and statute of the 14th of that king.

The constituted officers then of this corporation are the eight electors, of whom one is to be president, and four governors, who have generally born the name of censors. There is nothing to be gathered from the charter or statutes in any way tending to exclude any of the electors, except the president, from the office of censor; and as no duties are assigned to the electors, except those of filling up their own number, electing one of themselves to be president, and granting testimonials to country practitioners, they may be rather regarded as candidates for the office of president than as active officers of the corporation. The college is bound to choose four censors, for the purpose of confiding the choice of the Fellows to their choice. This choice is carried out by these officers. It is also incumbent on the electors to preserve their number, so that there may at no time be less than five, including the president, as they would not, after a further reduction, be capable of electing a new president or choosing the Fellows. (Wilcock On The Laws of the Medical Profession, p. 32.) It is evident that the charter so far incorporated all persons of the same faculty, of and near London, that every person who, on the 23rd of September in the 16th year of the reign of Henry VIII., falling within that description, was entitled to be admitted into the association. Such of them as had availed themselves of this privilege, and their successors, are named by statute 32 Henry VIII., as Commons and Fellows' (quoted in Wilcock, p. 13). But as to the persons who should afterwards enjoy that distinction, the original charter and all subsequent statutes are silent. Jane and Charles II. granted charters to this body. The first is silent as to the mode of continuing it; but the charter of Charles, after limiting the number of fellows to forty, directed that when a vacancy should occur in that number, the remaining fellows should elect another; the former number of twenty is to be given to 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 certainly been several times acted upon. (Wilcock, p. 34.)

The licentiates of the college who may practise within the precincts of London and seven miles round it were (until 1836) of three orders, viz., Fellows, Candidates, and mere Licentiates. The last of these classes, generally 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 who have received an official licence to serve the common community or college; and that the same community or college might yearly and for ever elect and make some prudent man of that community expert in the faculty of medicine, president of the same college or community, to supervise, observe, and govern for that year the said college or community, and all men of the same faculty, and their affairs, and also that the president and college of the same community might elect four every year, who should superintend the education, and be the officers of the said society, and that such physicians as shall be admitted into the precincts of London. The statute (14 Henry VIII.) confirmed this charter, and further ordained that the six persons above named, choosing to themselves two more of the said community, should be called and elected electors; and that the same electors should yearly choose one of them to be president of the said community; and then provided for the election of others to supply the places of such electors as should in future be void by death or
practice 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 to be appointed thereto and hold that practice by out of this competency. (Willcock, p. 38.)

The mode of examination is wholly in the discretion of the college, which has confirmed the immediate direction of it to the censors. It has however also appointed that the doors of the society's chamber 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 that right; it is therefore required that all examinations shall take place at a court held at certain regular intervals. (Ibid., p. 41.)

The order of Candidates was abolished in 1638, as above stated, but was revived as required then in universities of Oxford and Cambridge their inchoate 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 ipso facto a member or fellow; but as all future practitioners, within the precincts of and seven miles round that city, were required to be examined by the society, so that examination became one of the orders of the fellowship. 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 pursuit of medical knowledge. To this end, under 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, but directed that new fellows 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 all or Fellows:—It was at first provided (about 1555), that no one 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 according 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 no one should be admitted fellow until he had performed all his exercises and dis- putations in one of the 'British universities,' without dispensation; and in 1737, that none should be admitted into the college until he had not first been of the number of candidates for one whole year, or 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 1741, under the pretense 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 1768, it was resolved that no person should be admitted the order of candidates unless he had been created a doctor 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 in 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 choose in every other year those propose the comitia minora one licentiate of ten years' standing; and if the greater part of the comitia minora should consent, propose him at the next comitia majora to be elected 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 comitia minora 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 of the society, and whether or not the faculty 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 directly in the face of the statute: it is the imposing 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 acceptation strangers and quite unconnected with the college, which is ought to be 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 titles of more than fifty pamphlets, &c., written for or against the society 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 Injurious Effects of the Medical Act of the 4th George IV.' by Dr. Daniel Moynihan; published in London, 1826. Volume 1, pp. 373. After much dispute and discussion, these obnoxious bye-laws have late 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 reasons beyond that neither the charter 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 which it proposes, 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 worth and competence 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, and obstetrics.

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, and 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 thus described, they have attended for three years the practice of physicians in some general hospital in this country for at least twelve months.

Candidates who have already been engaged in practice, but have not passed through the complete course 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, function, and health 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 college, and each candidate is examined 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 desires that all those who receive its diploma should have had such a previous education as would imply a competent knowledge of Greek, but it does not consider this indispensable if the other qualifications of the candidate prove satisfactory; it cannot, however, on any account, dispense with a familiar knowledge of the Latin language, as constituting an essential part of a liberal education; at the commencement therefore of each oral examination, the candidate is called on to translate a passage from Hippocrates, Galen, or Aristotle; or, if he declines this, to make another passage from Greek to be translated into English a portion of the works of Celsus, or Bydenden, or some other non-Latin medical author.

In connection with the oral examinations, the candidate is required to answer questions in English on questions on the different subjects enumerated above, and to translate in writing passages from Greek or Latin books relating to medicine.

Those who are successful at all these examinations will receive the following diploma under the common seal of the college:

"SEMINARIAE, No. A. B. Presidente Collegii Medicorum Londiniensia, ut hunc consensum sociorum ejusdem, asseret nobis a domino regis parlamento commissum, examinassum et approbassum omnibus virum, T. S. et ei concessisse libram facultatem et licentiam, tam docendi quam exerendi scientiam et artem medicam, idemque summis honoribus et titulis et privilegiis, quoscumque hic vel alibi medicos concedi solent, intra auctoritatia nostris limites frui dedisse.

In cujus rei fidem et testimonium, adjecta censo- rum et registrarii chirurgiis, sigillum nostrum commune presbentibus apoli feclatus, datis ex meilibus collegios die *** anno..."

"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 understood that the candidate should have sufficient knowledge of the English language and the medical 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 of which all are capable, and there will be ample security afforded to the public and the profession, that none but those who have had a liberal and learned education can presume, with the slightest hope of success, to offer themselves for approval to the censors' board: and as the college trusts that, by a faithful discharge of its own duty, it can 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, the board has seen fit to publish, under the same appellation, 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 substantially the same, which is of the highest importance, and that all concerns the qualifications of its members; it has resolved to estimate all testimonial, 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 qualification 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 but information respecting the antiquities of the College of Physicians is to be found in the head, "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, 1518, were held in the house of Mr. Linacre, then at No. 5, 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 Linacre family. It stood on the bottom of Amen Corner. During the civil wars, the premises were condemned, as part of the property of the church, and sold by public auction; on which occasion, Dr. Hanney 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 few years, the meetings of the fellows were generally held at the house of Mr. Linacre. The 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 25th of February, 1674, under the presidency of Sir George Ent. Here the college held its regular meetings till within a few years, when (as Dr. Macmichael says) the change of fashion having overcome the genius loci, the present new college, at the north-west corner of the Royal Exchange, was built, and an elegant Latin oration was delivered by the president, Sir Henry Halford.

PHYSICS. The word "physico" (from the Greek word) science of nature, might be included 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 removing them; but in the continental languages it still retains a more general signification. Also physics (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, consider under the general term the sciences of experiment. There is no usage which in any degree approaches a universal reception; we prefer the second-mentioned signification.

PHYSIOLOGICAL ANATOMY. The art of determining a 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 practitioner of physiognomy, are nearly as definite as the few principles which those who have made it an object of peculiar study have established. The circumstance on which the chief and surest 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 distension of the particular muscles chiefly exerted. Thus a person in the frequent habit of sneering contemptuously acquires at last a slight crease in his upper lip by the disproportionate size and power of its elevator muscle; he who is often meditating has wrinkles of the slight frown and the contraction of the brows which are commonly associated with deep thought, permanently fixed; he who has his attention constantly slant to the objects around him acquires an expression of vivacity in the open- ness and the dilatation of his eye and the tension 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. Whatever the position of its muscles have been exercised as rarely and with as little return 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 nature, without imparting 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 study of it by every one unconsciously engages in during his intercourse with the world.

PHYSIOLOGY (φυσιολογία, from φύσις, nature, and λόγος, 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 (Glands), Bone, Skeleton, Articulation, Muscle, Larvæ, Nervæ, Brain, the several organs of the Senses, Embræ, Ovula, 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.

According to M. de Blainville, have a regular, symmetrical, bilateral, contractile, fleshly body, often very long, provided with a complete intestinal canal, with a more or less considerable circferous dilatation; there are a number of such canals in each of them, one central, and a number branches in the form of very long, very contractile cirrhi, 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 no exceptions in 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 Physogryada, is the rarity of finding them in an unmutated 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 until the time when MM. Quoy and Gaimard submitted to his observation many specimens of the common Physalia, and M. Hirssier de Gerville sent him an individual tolerably perfect, fresh preserved in spirit of wine. Since then M. de Blainville had opportunities of observing some specimens of Physopora and Stephanonema, 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 Actinoidea, to form a distinct order of them under the type of Malacozaora. Nevertheless, he observes, the Stephanonæ may not belong to the same family as the Physopora 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 Physalia were first observed, and from the time of Browne, who first figured them, down to M. Lesson, who published some new ones 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 Physopora best, but as he has been long since, the Stephanonæ 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 Physopora 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. (Actinologia, 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 (Pulmo Grada); 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.

Nataitory organ simple and lamellar.

Physalia.

Generic Character.—Body oval, rather elongated, more narrow and proboscis-diform anteriorly, hydathoïde in the middle, 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; branchia very anomalous, and composed of a great number of diversiform cirrhus 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.—

Example, Physalia Arctica.

This is the Arctica of Browne; Medusa Caravela of Müller and Escholtz; Physalia pelagica 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 flocks of the latter sailing. This Physalia 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 48° of

Physalia pelagica; the crest not expanded,
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 zoophytum, 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, solida, purpurea,
oblonga, cirrhosa longisima; and he figures it with the
crest or lamina expanded as 'A. carvel,' plate iii., fig. 5.

Locomotive organs complex and vesicular.

Physosophora.

Generic Character.—Body more or less elongated, cylindri,
iform, 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
cirrhiiform productions, two of which are longer and more
complex than others: mouth at the extremity of the hyda
iform part; anus terminal; organ of generation? (De Blainville.)

Example, Physosophora Muizonemna.

M. de Blainville states that the Physosophora differ from
the Physalia in swimming or floating in a vertical position,
the aeriferous pouch being above and the cirrhiiform pro
ductions below. The distinction of the species appears to
him to depend especially on the number and form of the
nataatory organs.

P. C., No. 1120.

Diphyosa.

Generic Character.—Body cylindrical, elongated, con
tactile, muscular, composed of three parts, the anterior
part vesicular, the middle part bearing on its lower part two
hollow nataatory organs, placed one before the other, and the
third part (which is the longest) provided above with a
fibro-capsilaceous plate, and below with cirrhiiform pro
ductions; mouth terminal; anus? (De Blainville.)

Example, Diphyosa singularis (Quoy and Gaimard;
Astrolebe, Zoologie).

Rhizophysa.

Generic Character.—Body free, transparent, very con
tracite, very much elongated, swollen at one extremity into
a sort of aeriferous bladder with a terminal orifice, provided
throughout its length on scattered cirrhiiform productions
mingled with cirrhiiform filaments. (De Blainville.)

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 planotoma, Péron; (Rhizophysa
Péronii, Ech., Acauleph., p. 148, No. ii., t. 13, fig. 3).

2. Species whose tentaculiform productions are covered with
cirrhiiform filaments. Nataatory organs unknown. (Genus
Epibultea, Ech.)

Example, Rhizophysa filiformis (Physosophora filiformis,
Forsk.), represented above.

1. a portion of Apoxemia Uranis.

2 a part still more highly magnified; 4 a single sucker.
Species provided with two sorts of locomotive organs, the anterior ones hollow, the posterior solid.

Apoleminia.

**Apoleminia**

**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 tentacular form cirri, furnished with vermiform suckers.

Example, Apoleminia Urania.

Stephanomia.

**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 Amphiphrades, Péron et Lesueur (Voyage aux Terres Austr., p. 45, pl. 29, fig. 5).

Protomedea.

**Protomedea**

**Generic Character.** - Body free, floating, cylindrical, fistulous, very long, provided above with an imbricated assemblage of gelatinous bodies (on two alternate rows) which are full and hippo-poloidiform, and throughout the rest of its length with filamentous cirri, fistulous, diversiform productions. Mouth protobasidiform, at the extremity of a sort of vesicular stomach.

Example, Protomedea lutea.

Rhodophyza.

**Rhodophyza**

**Generic Character.** - Body short, cylindrical, fleshy, swollen above into an asciiform bladder, and provided below with a variable number of gelatinous bodies, which are full, costiform, forming a single transverse series, and with a variable number of filamentous diversiform productions. Mouth and anus terminal. (De Blainville.)

Example, Rhizophyza Heliantus.

These animals form Cuvier's second order of Acalephans, under the name of Hydrostatic Acalephans. He characterises them as being recognised by one or two ordinary vesicles filled with the air, by whose means they are suspended in the water. Appendages singularly numerous and varied in form, some of which probably serve as suckers, others perhaps as ovaries, and some, longer than the others, are tentacula, are joined to these vesicular parts to compose the whole apparent organization of the animal. Cuvier adds that it is not observed whether they have a mouth well distinguishable as such. (Regne Animal, 1830.)

Rhodophyza Heliantus.

**PHYSOPHORA.** [Physograda.]

**PHYTOCRINUS.** [Engrinates, vol. ix., p. 391.]

**PHYTOLACCA.** A genus of tropical or subtropical herbaceous plants, with erect or occasionally twining stems, a thickish turnip-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 mealily albumen. Phytoleca decandra, a species found wild in Virginia, where it is called Pocao, whence the vulgar name of Pope 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 acridity of its leaves, this plant, when very young, is said to be eaten in the United States as asparagus; and Dr. Rayle relates that he found P. acinoa, a Himalayan species, employed in the same manner in the north of India, to be very palatable when boiled.

**PHYTOLACCAEÆ** form a small natural order of

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 root.
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 asoppelous plants and allies of the Chenopodiaceae and Polygonaceae or one of the latter families, and all four are included in the tribe of the Malvaceae. Notwithstanding the apparent difference between these two stations, it is probable that both are correct, and that Phytolacca and real plants connecting Chenopodiaceae and Caryophyllaceae. If so, they furnish a striking instance of the further peculiarities proposed for Exocarpus 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 used in the medicines of some countries. 

PHYTOSAURUS, Jäger's name for a genus of fossil Saurians. Two species are recorded, Phytosaurus Cabrodon, and Ph. Cylindricodon, both from the dolomite sand-stone (Keuper formation).

PHYTOTOMA. [Musophagidae, vol. xvi. p. 28.]

PHYTOTOMINÆ. [Musophagidae, vol. xvi. p. 28.]

PHYTOZOA ARIA. This is the general term employed by M. Ehrenberg to include the numerous species and genera of the fresh and salt-water algae, and the Algae can be placed under three great classes, or orders, as Ehrenberg calls them, of the Algae, viz. Phytozooa, and Vichrytia, and one for the purple, red, and green families. From that time Phycologia never recovered its ancient importance, and the Algae have been forgotten.

PHYTOSAURUS, Jäger's name for a genus of fossil Saurians. Two species are recorded, Phytosaurus Cabrodon, and Ph. Cylindricodon, both from the dolomite sand-stone (Keuper formation).

PHYZELLA, one of the divisions of the Terebellides of Savigny (Amphitrite, Cuv. part; Annulides Tubicules of Cuvier).

PIA MATER. [Brain.]

PIACENZA (Piacentia), 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 Con- 

Pianist, 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 Con- 

Pianist, 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 Con- 

Pianist, 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 Con- 

Pianist, 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 Con- 

Pianist, 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 Con-

PIACENZA (Piacentia), 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 Con-

PIACENZA (Piacentia), 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 Con-

PIACENZA (Piacentia), 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 Con-

PIACENZA (Piacentia), 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 Con-

PIACENZA (Piacentia), 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 Con-

PIACENZA (Piacentia), 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 Con-

PIACENZA (Piacentia), 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 Con-

PIACENZA (Piacentia), 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 Con-

PIACENZA (Piacentia), 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 Con-

PIACENZA (Piacentia), 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 Con-

PIACENZA (Piacentia), 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 Con-

PIACENZA (Piacentia), 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 Con-
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 finger was lifted off the key. The touch of the claviachord was peculiar, partaking both of 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 tremulant 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.

![Fig. 1](image1)

**Fig. 1.**


The action of the square piano-forte, on its first introduction, consisted of a key, a lifter, a hammer, and a damper. The key was the same as that of the claviachord. The lifter was a brass wire, with a piece of hide leather as a head, which was covered with a piece of soft leather as a finish. This lifter, when in motion, struck the hammer against the string, and thus produced the tone of the instrument. The damper followed the performer, and stopped the vibrations as quickly as the finger was removed from the key. (See fig. 2.) The tone of this piano-forte was thin and very, the hammer having only one slight covering of sheepskin leather upon it.

![Fig. 2](image2)

**Fig. 2.**


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 are 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 bad 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 instantaneous 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 must confess 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 piano-fortes which have it; for there are always called, by excellence, grand-square piano-fortes. 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, where, 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.

![Fig. 3](image3)

**Fig. 3.**

Exhibiting all the varieties of the modern square piano-forte as respects the action.

![Fig. 4](image4)

**Fig. 4.**

Harpichord Jack.

The action of a grand piano-forte consisted of a key, a lever, a hammer, a button, a check, and a damper, with rails and sockets to connect them. By this combination of parts, every musical intention known or desired at that time was perfectly attainable, and with admirable effects by Mozart, Haydn, Cramer, and others (see fig. 5). But we have now and more severe judges to encounter: former actions are no longer sufficient; new effects are to be given, and new powers are called for. Fortunately, these things have been accomplished, for new actions have risen up in abundance, and we have only to choose between them.

The more or less of excellence will, doubtless, occasionally puzzle the amateur, but some ready-fingered friend or acquaintance may be called in, and the difficulty is instantly removed by a single cadence on the instrument desired; whether major or minor is quite immaterial.

No musical instrument is so universally admired as the piano-forte. Its compass, whether six octaves, six and a half, or seven, is sufficient for all purposes of musical composition, and may really be considered a miniature orchestra. The smaller instruments have generally only six octaves, the grands have six octaves and a half; seven octaves we have not yet learned to admire. The strings of the early piano-fortes were partly of steel and partly of brass, the treble notes of steel, and the lower notes of brass, a few of which, in the bass, were over-lapped or covered, rather open, with plated copper wire to give them more gravity according to the length attainable in the instrument. But modern piano-fortes have steel wire throughout, with about an octave in the bass closely lapped with unwashed copper.
wire. 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 Penns., 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 may be made of several different kinds: 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 buff 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 pedals. For, by passing the action to one string, it is not only straining to the centres of the hammers, but is also very apt to disturb the tuning of the unisons, 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 some effect is accomplished, but with more delicacy and vibration in its effects. The foreign name for this pedal is jeu céleste, 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. 5.

Fig. 6. Myers, Broadwood's former and new Patent Grand Action. (Invented by Mr. Southwell, son of the late Mr. W. Southwell.)

Fig. 6.

The shaded parts are the new additions, the intention of which is to keep the hammers at a certain distance from the strings when the finger is on the key.

Fig. 7. Meyers, Collard and Collard's new Patent Grand Piano-forte Action; the Invention of Mr. George Stewart.

Fig. 7.

Fig. 8. Mr. Errard's Patent Grand Action; the Invention of his Uncle, Mr. Sebastian Errard.

Fig. 8.

Fig. 9. Mr. Worrum's new Grand Action. (This Action is based on the Piccolo Action.)

Fig. 9.

Fig. 10. Mr. Zeiller's new Grand Action.

Fig. 10.

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 several instruments and remained amongst which we find the popular or 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 long since 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 Wornum, 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 patents which were not given to Mr. Wornum, especi- cially those called down-stringing 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 spring, which, in the present age of performers, whose effects 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. Mott's instrument for changing the size of the string, and Mr. John Trotter's alternating 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 was a well-tempered 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: a 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 sostenente was an application of a cylinder and silk loops to an upright piano-forte. The loops were attached to the strings, and the cylinder, which was moved by the foot, as it were bow'd them, and the tones came forth somewhat like the tones of the siphon. Under Mr. Mott's fingers, this string 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 effect like two flutes, and in an 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 with broad heads; by which arrangement a black key could be taken by either the thumb or the fore finger of the performer. This 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 wear his promise is certain, and many double sharps and double flats, with all their accidents, are anything but agreeable to those who cannot devote their whole lives to the study of music.

Fig. 13. Mr. Trotter's transposing piano-forte.
PIASTRE. [Monty.]

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 ambulatory, whether for the purpose of being a part of the building, such cloistered walks being very common in 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 particular cases than as a general denomination for 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, such an arrangement, according to his plan, and the Quadrant being different in architectural character, as may instantly be perceived by comparing the last-mentioned with the small piazza beneath the County Fire-Office adjoining to the Quadrant. Though for a different reason, he such an arrangement has quite as much to recommend it in this country as in Italy itself; at least for principal thorough-fares and trading streets; because if not required as a protection against the sun, it is desirable as affording dry and sheltered corners for the stalls on all sides of the town, 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 Fire, 1666, the Piazza, 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 vicinage of New London Bridge.

PIAZZA, Town of [Sicyl.]

PIAZZI, JOSEPH, was born at Ponte in the ValTelline (Switzerland), July 16, 1746. His education appears to have commenced at Milan, where he assumed the habit of the Theatines, and became an inmate of the convent of St. Anthony. Here and at Turin he studied the classics and mathematics. He was afterwards sent to Rome under Lessueur and Jacquier, the editors of the Jesuits' edition of the "Principi." 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 mathematics at Messina, and entered the service of the Nobles at Ravello; but here again his religious opinions made him many enemies. Soon after the publication of two philosophical theses, which were deemed "too bold for so young a professor," he was appointed mathematician at Cremona, and thence to Rome, where he was for some time reader of deistic theology at S. Andrea della Valle. In 1780, at the request of Jacquier, he was appointed professor of the higher mathematics in the Academy of Palermo, where, with the co-operation of the vicerey, he founded an astronomical observatory. In 1787 he visited Paris, where he made the acquaintance of Lalande, Jeaurat, P戒指t, Delambre, and Bailly; also of John Cassini, Mer- chand, and Legendre, who at that time occupied in determining the difference of longitude between the observatories of Paris and Greenwich. He next visited England, where he became intimate with Maskelyne, Herschel, and Young, in particular with Robert Baker, to whom he confided the construction of the instruments for his new observatory. Much of his time during his stay in England was passed at the observatory of Greenwich. Here, with Dr. Maskelyne, he observed the solar eclipse of June 3, 1788; and the year following as mathematician a paper to the Royal Society (Phil. Trans., vol. 79, p. 55), containing the observations of that eclipse by twelve other astronomers, and the consequences thence deduced by himself relative to the form of the earth. Mr. Piers in 1804 was appointed to carry piazzi to the longitude of the Dublin observatory was taken at 24° 58'; Piazzi gives 25° 13'4", and expresses his confidence that this is within two seconds of the truth: the longitude now given in the "Nautical Almanoe" is 25° 22'. This was his earliest prediction of an astronomer. Having after much importance obtained the completion of his instruments, he returned with them to

Sisily in the latter part of the year 1789, and very soon after became one of the most active and accurate of modern observers. The observatory of Palermo was at that time the most southern in Europe, that at Malta having been recently destroyed by fire. In the course of the first ten years he determined the positions of no less than 6748 stars. His first catalogue was published in 1805, under the title of 'Stellarum Inerrantium Positiones,' which was deservedly honoured by the Academy of Sciences of Paris, and acquired for its author the esteem and adoration of astro- nomers. It was while thus occupied that he discovered, January 1, 1801, the first of the four planets now known to be situated between the orbits of Mars and Jupiter, and to which he gave the name of Ceres Ferdinandia, out of compli- ment to his patron the king of Naples [Ceres]. Per- dinand would have commemorated the event by naming among the astronomers of Europe a god medal bearing the effigy of Piazzi; but the latter suggested that the money would be more usefully applied in the purchase of an equa- torial, of which the observatory was in need.

In 1818 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 confided 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, published in 1818. Speaking of this catalogue, the council of the Astronomical Society remark, in their seventh annual Report, that 'it exceeds everything of the kind which preceded it, and shows the powerfully to which words can express what may be affected 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 Baron Zach and Professor Gauss. He died at Naples, July 29, 1826. His library and instruments he bequeathed to the observatory of Palermo, and a liberal annuity in perpetuity, to be appropriated in succession to the education and maintenance of a mathematician who evinces 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 Angiela under the eye of Colonel Visconti, the present director of the geographical engineers at Naples. The published works of Piazzi mentioned in different numbers of the 'Bulletin des Sciences' are appended to a translation of the above article in Brewer's 'Journal' for 1827 (vol. vi., p. 193). They are as under:

1. 'Discourse on Astronomy,' Paler., 1790.
2. 'Description of the Observatories at Palermo,' in 9 books, of which four were published in 1792 and 5 in 1794.
3. 'On the Discovery of the Planet Ceres,' Paler., 1802.
5. 'On the Procession of the Equinoxes,' 1804. (Ephemer. de Milan.)
6. 'On the Parallax of some of the Fixed Stars.' (Mem. Soc. Ital., xiii.)
7. 'On the Measure of the Tropical Year.' (Id., tome xiii.)
8. 'On the Proper Motion of the Fixed Stars.' (Mem. de l'Inst. Nat. It., tome ii.)
9. 'The Metrical System for Sicily,' 1812.
10. 'Lessons in Astronomy,' 1817.
11. 'On the Observed and Calculated Solitudes.' (Mem. de l'Inst. de Milan, tome ii.)
12. 'On the Italian and European Clock.' (Giorn. di Scienze per la Sicilia, Aug., 1824.)
13. 'On the Progress of Astronomy.' (Giorn. de Soc. Letter. et Arti per la Sicilia, April, 1824.)
14. 'Description of the Meridian of the Cathedral of Palermo, established by Piazzi in 1785,' by M. Cacciatore. (Id., August, 1824.)

PIBROCH, in Scottish music, the march or battle-tune of the Highland clans.

PICA. [Cornell, vol. viii., p. 68; MAPPII.]

PICAMAR, a peculiar compound obtained by Reicher- bach from wood-tar.
Its properties are—that it is nearly colourless, limpid, and transparent; it has the consistency of a thick oil; to the touch it is greasy; its smell is not very strong or disagreeable, but it is peculiar; the taste of picamar (in Oise amarom) is not unpleasant, but when boiled in contact with it, it becomes gradually brown; its boiling point is about 345°. In water, whether cold or hot, it dissolves sparingly, and the solution has no effect either on litmus or turmeric paper.

Picamar is a salt, and the bitterness of pyrogluconic acid is derived from its presence. Alcohol, ather, pyroxylic spirit, and creosote dissolve it readily. It dissolves sulphur, phosphorus, and selenium, and, when hot, caoutchouc also, but this is deposited as it cools. In cold sulphuric acid it dissolves without decomposition, but this takes place when they are heated together. By nitric acid it is decomposed, and a reddish brown mass is formed, but without any oxalic acid.

Picamar combines with ammonia, soda, lime, and barytes, and with potash it forms a crystalline compound which is nearly insoluble in alcohol; but when it is diluted and heated, it takes up a large quantity of this compound, which on cooling forms a red platy crystal. L'Estel, or La Connaissance, is a salt.

It has not been analyzed, and has not as yet been applied to any useful purpose; but it has been suggested that it may be useful employed in preventing steel instruments from rusting.

PICARD, JEAN, was born 21st July, 1620, at La Flèche in the present department of the Sarthe, and became priest, and prior of Rille in the same department. Scarcely anything is known of his early history. Even the names of his parents appear to have been forgotten, as there 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 duke of Guise, whom the astronomer Lavoisier 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 as an assistant of 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 result of his efforts made him the first to comprehend the magnitude of the problem of the measurement of angles; which alone, observes Delambre, would entitle him to the esteem and remembrance of astronomers. Prior to this, plain sights only had been taken, and not only are objects from the fixed stars altogether invisible, 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 Lahire 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 'Les Pharoques,' it would appear that he should be credited exclusively to himself. Soon after this he introduced an entirely new system of astronomical observation, wherein the pendulum, then recently invented by Huygens, is first brought into use in determining the right ascension of the stars by noting the instant of their passage across the meridian.

TRANSIT INSTRUMENT. This method, observes Delambre, which is adhered to at the present day, 'insures to those two authors, Huygens and Picard, an incontestable superiority over all the astronomers of the time, and above all over Galileo.' 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 correct tables of the sun and fixed stars, as also tables of refraction, 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 Hœne in order to determine the position of the horizon. His expectations were not realized, but it appeared sufficient 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 on the warrants of this celebrated observer. On his return he met with Koezem, 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 at length completed in 1672. It was occupied by Dominic 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 by within the same building was allotted to 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 effect, 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 society was deprived of the services of one of its most eminent members, with Picard in 1679, and was continued by him till his death. The same year he was nominated with Lahire, by the king, to conduct certain surveys along the coast of Gascony, of which nothing is known, which sufficiently proved 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 so far as the extremities of the kingdom: a proposal which has since been carried into effect. As an astronomer, he was no less industrious and accurate than, as a philosopher, he was enlightened. His observations from 1666 to 1682, collected and published by, Lemonnier, in 1741, under the title of 'Essais d'Histoire de la Mer de Terre,' in 1761, a large folio of 30 pages. The base extended along a paved road from Villejuive to Juvisy; it was twice measured, the results being 5662 and 5663 toises, a degree of 54° 35' between the latitudes of Amiens and Malvineau he found to be 1° 22' 55'', and the length of the intermediate arc 78,850 toises; whereas it followed that the length of one degree would be 56,631.20 toises, but this result was that of Chastelot. 'Less,' says Picard, 'this toise should share the fate of those employed in former surveys, of which only the name remains (it has since been lost), we will connect it with a measure which, being taken from nature herself, must be immutable and universal.' He then states that he determined with great care the length of the pendulum vibrating seconds (which he supposed was constant for all latitudes), and which at Paris he found to be 490.122 toises, as the pendulum of the 'Nouveau Picard' would appear to be 500.020. 4. The most accurate determinations which have since been made do not differ from this result by so much as the 3/4 of a ligne. (Francour, *Géométrie,* p. 236.) At the date of this survey the law of refraction was imperfectly known, and its effects were neglected. The effects arising from what has since been termed aberration and nutation (Aberration; Precession and Nutation) had been felt, but astronomers then, and for more than half a century afterwards, continued to treat them as a sang-théâtre and to neglect their application. These were therefore sources of error which vitiated the observations of Picard in common with those of all other astronomers of that time; and in addition an error of six sixtieths of a degree had been inserted in the tables of refraction, 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 Hœne in order to determine the position of the horizon. His expectations were not realized, but it appeared sufficient 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 on the warrants of this celebrated observer. On his return he met with Koezem, 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 at length completed in 1672. It was occupied by Dominic 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 by within the same building was allotted to Picard. 'He saw,' says Delambre, 'all his projects neglected or their execution deferred; all expenditure and encourage-
differs from Picard's by 17 toes (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 superintendence of his instruments and methods over those employed in any earlier observation, must produce 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 could not in any wise be relied on. 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 1666, failed to establish the truth of Picard's measurements by the triangulation of the measure of the earth's radius, and did not resume its consideration till he heard of Picard's survey, by which it was confirmed. Norwood's measurement of the arc of 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 measure is called by Delambre a great piece of good fortune. [Norwood.]

Picard died at Paris, 12th July, 1682 (Delambre); according to other authorities, his death took place in 1683 or 1684. He was succeeded by Picard Mérigot, whose surname is inserted in the 'Memoirs' of the Academy of Sciences. The numbers refer to the volume:—

vi. De la Pratique des Grands Cadran; par le Calcul: De l'abatement du poids des anciens Astronomes de France; Portion Aquaria Effluentium; Fragments sur Diodot; Traité de Levelling. All but the last are in the 'Divers Ouvrages,' &c., fol., Paris, 1693.

vii. Measurement of the Earth; Astronomical Observations made in Denmark; Astronomical Observations made in various parts of France (4 papers).

x. Immersion and Emission of Jupiter's Satellites observed de Cohl in 1675, and 1755, and 1756, by Cassini, Picard, and Roemer (2 papers); Experiments relative to the Phenomena observed in the Vacuum of the Barometer; Occultation of Saturn by the Moon, observed by Cassini, Picard, Roemer, and de l'Hirer.

(Delambre, Astronomie Moderne, and Biographie Universelle; Lalande, Biographie Astronomique; Condoert, Etoge de Picard; Fontenelle's Etoge de Picard; Montucla, Hist. des Mathématiques, &c.)

PICARD, LOUIS BENOIT, member of the French academy, and one of the most talented and successful draughtsmen of his age, was born at Paris, in 1765. His first productions were recognized at the outset by the advice and instructions of his friend Andrieu, the author of 'Les Étoudris,' and several other popular pieces) was 'Le Badinage Dangereux,' which was followed by 'Le Premier, des Populaires.' Picard's reputation was now extending, and he received many commissions for portraits of contemporary manners, playfulness of dialogue, and clever traits of satire; to such degree indeed that by some he was styled the Malèrie of his day. Not only were his productions eminently popular at home, but many of them were either translated or remodelled by Iffland, Hall, and other German writers. Among his pieces in verse, 'Mediocre et Rampant,' 'Le Mari Ambigieux,' and 'L'Amitié d'Amour,' are considered his best; while the 'Contrat d'Union,' 'La Petite Ville,' and 'Les Mariettes' are regarded as his masterpieces among those in prose. Besides his literary merits and the strong comic touch which pervades his productions, he is as a draughtsman of the first rank. His pictures of the Revolution, and of several other novels which obtained considerable vogue. Among these, 'L'Homme Holiday' has been translated into English under the title of 'The Rogue, or Man of Integrity,' and although exaggerated in the chief character, it contains several striking and well-drawn scenes replete with latent satire. In addition to these various labours with his pen, Picard was at one time a performer at the Théâtre Louvois, and from 1801 directed the Folies afterwards. He was a successful manager of the Opera and the Odéon theatre, which latter post he continued to hold when that house was rebuilt after being burnt down in March, 1818. He died December 31st, 1828.

PICARDIE (I.A.), a maritime province of France, constituting one of the military governments into which, before the Revolution, the artillery was divided. It was bounded on the north-east by Artois and Flandre Française (French Flanders), on the east by Champagne, on the south by the Ile de France, on the south-west by Normandie, and on the west by Anjou. It was divided into the Arrondissement of Amiens, chief town of which was Picardie, and that of Abbeville. Its form was very irregular. The part south of the river Authie had its chief extension from west to east, about 145 miles from the mouth of the little river Breâle (which divided it in two) to the nearest point of the coast of Picardy in Champagne; but the breadth of this portion from north to south was in no part greater than 60 miles, and generally was much less. A narrow strip of the province projected from this southern bank along the coast, about 20 miles northward from the Authie, but not having in any part a much greater extension inland from west to east than 20 miles.

The province above described was sometimes distinguished as Picardie Septentrionale (Northern Picardie), in order to distinguish it from the districts of Beauvaisis, Valois, Soissons, Laonnais, and Noyonnais, to which, though included in the military government of the Ile de France, the name Picardie Mérigot was assigned. The name Picardie Mérigot was used by most of the French writers of the eighteenth century. In the latter part of the eighteenth century it was proposed to be recorded 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.]

Picardie was divided into Haut and Bas; the former into Haut and Lower. Haut or Upper Picardie (in which Picardie Mérigontale was included) comprehended the districts of (1) Amiens, chief town Amiens (population 45,001); (2) Santeure, chief town Santeure (population 4,831); (3) Vermandois, chief town St. Quentin (population 17,866); and (4) Thiriache, chief town Guise (population 3,072). The districts of Picardie Mérigontale are mentioned above. Amiens, Vermandois, and Thiriache preserved the designation of the Belgic nations by which they were inhabited; the Ambiani, the Veromandui, the Bellavoci, and the Suessiones. Basse or Lower Picardie comprehended the three districts of Le Calaisis, Le Boulongnais, and the count of Fountaine, of which the capitals were respectively Calais (population 10,437), Boulogne (population 20,856), and Abbeville (population 19,162); Le Calaisis was sometimes designated Le Pays de Calaisis, and the same term was used for the province divided in England, by whom it had been long held. Le Boulognais was sometimes divided into Haut and Bas, the former having Étaples for its chief town, the latter Boulogne. Le Fountaine was divided into four counties, the chief county Fountaine; Le Calais; chief town Abbeville; the county of Montreuil, chief town Montreuil (population 4,083); the district of Marquenterre, chief town Quent-le-Jeune; and the district of Vineux, chief town St. Valery-sur-Somme (population 3,253). A small part of the eastern extremity of Picardy is included in the department of Aisne.

The population given above is that of the communes, from the census of 1831.

PICCIONI, NICOLÒ, was born at Bar in the Neapolitan dominions, in 1728. His father, a musician, intended him for the church, but the predilection of the son for his parent's profession was too strong to be overcome, and at the age of fourteen he was entered at the Conservatorio di Santa Onofrio, where he completed his studies under Leo and Durante. The first marked proof of his genius for composition was evinced in his serious opera Zeno, produced at Venice in 1754. In 1763, he was invited 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 Figliola, in which he introduced the first use of the overture. In 1766, which was, and ever will be, considered as Piccino's masterpiece, and be admired for the originality, the beauty, and the appropriateness of its airs, as well as for the judicious manner in which the different characters are represented as they are, compared with those of a later age. It saved the manager of the Teatro delle Dame at Rome from Vol. XVIII.—U
ruin, and excites a degree of enthusiasm amounting to extravagance: dresses, wines, maybodings, took the name of the principal character in the piece, La Coccinella; and during several years the fireworks displayed on the festival of that patron 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, when his genius led and disposed it, the stage, in which he was called to play the chief part, that of the chef-d'oeuvre, he now 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 surprises us the more, for it is confirmed by M. Ginguené 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.

On the return of this enrolling company to Paris, he arrived there in 1776, and prepared himself to compose for the Académie Royale de Musique. His 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 also very formidable rivals, namely Gluck, and afterwards Scezini. For some account of the musical feats in Paris to which his genius has given such a brilliant turn, no place will answer better than Gluck. His Roland—a drama by Quinault—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 was not, as a matter of fact, entirely exempt from the favour of the French court, 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 by his enterprise and property. He was enabled to smile on his own sovereign, but having carried with him to his native country political opinions not likely to be pleasing to the ears of an absolute monarch, and which he had the impudence to pour into their ears, he was disgraced, proscribed, and placed under the surveillance of the police. In 1799 he contrived to return to Paris, where his friends obtained for him a pension of 5000 francs, besides a gratuity of 2400 more by the state. The Conservatoire de Musique. But shortly after, oppressed by domestic afflictions, he experienced a return of his former attack, under which he finally sunk in 1806, and was interred at Passy, where a handsome tomb is erected to his memory.

PICOLOMINI FAMILY. [PIU. II.] PICCOLOMINI, ALEXANDER, born at Sienna in 1508, died 1578. He was titular archbishop of Patras, and cardinal bishop of his native place. No event of his life are particularly worth recording, but the wide extent of his writings, and the esteem in which they were held by his contemporaries and immediate followers, 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 (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 Beyer, and to which the Picollomini owed it. His works are of a most miscellaneous character—astro-physic, 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 present.

PICO'NEM. [MARCO D'ACONZA.] PICCHERGU, CHARLES, a general of the French republic, was born of humble parents, in 1761, at Arbola in France. He joined in 1786, for the expedition of Brixen, was elected 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 to the command of the army of the North, which was in a state of great disorder. M. Thierry says of him—He possessed spirit and resolution, but his military genius did not rise above mediocrity. Be that as it may, he restored order and discipline to his commands, and in the winter-quarters, they were masters of the whole country to the line of the river Waihl, excepting Nimegue, the isle of Bommel, and Brux. The winter proved exceedingly severe, however, and the troops of Grenada showed no disposition to bear artillery, Picciguer made a simultaneous and completely successful attack on the above places, and crossed the Waal in January, 1795. The English were obliged to embark, thus the city of Grenada abandoned to the French. The king assembling the staves to make no more resistance, fled 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 Picciguer 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 faubourgs in 1792. 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 name of king of Rome, and restoring the Bourbons to the throne. His treason being shortly suspected, he was superseded in the command of the army of the Rhine by 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 1789. The king being unwilling, he fled to England, and being detected in a conspiracy to overthrow the republican party, he was arrested September 4, 1797, sent to the Temple, and, with Barbeisle, Wiltot, and several more, was immolated in la nef, St. Victoire, where he was made his escape to England, where he was well received as a partisan of the Bourbons. In 1804, Picciguer and Georges Cadoudal were employed with several of the Vendée leaders to organise a plot to overthrow the government of the First Consul. Being detected in the act of recruiting his party,he was arrested at Paris on the 17th February, and sent to the Temple. While a process was being commenced against him, he was found, on the morning of the 6th April, 1804, strangled. His death was marked by the stigma of murder on Bonaparte, but there do not seem to be grounds sufficient to establish this charge. (Thiers, Hist. de la Revolution; Biog. Universelle.)

PICO, [AZORES.] PICO, GIOVANNI DELLA MIRANDOLA, born in 1463, was the son of Giovanni Francesco Pico, count and sovereign of the little state of Mirandola and Concordia, which now forms part of the Modenese territory. [MODENA, DUCHY 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, philosophy, general literature, and poetry. He learned Latin, Greek, Hebrew, Chaldaic, and Arabic. With regard to philosophy, he followed the Platonics, or rather the Neo-Platonics, or Alexanderine school. He travelled through France and Italy, and sustained public scholastic disputations in several universities. 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 a treatise on his proposed universal history of subjects, logic, ethics, physics, metaphysics, theology, mathematics, art, and the cabbala, 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 erudition was not without danger, especially in that age. Out of the 900 propositions, 13 were picked out by officious persons which savoured of heresy, or incrudelity, or something of the kind, and were avowed as grounds of a strict inquiry upon so grave a subject. Pico wrote his defence, which was drawn up with great modesty, and in
which he professed his submissivc 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 grandson of Adam and another of Satan, and 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 the age of thirty-two, for his residence, being attracted by the renown of Lorenzo de Medici and his friends. (Michaevelli, Stor. Florent., vi.) He thus 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, radiated structure and a yellowish green. Fracture splintery. Hardness 3½ to 4. Opalescent, or translucent on the edges. Lustre slight, but somewhat pearly. Before the blowpipe it colours borax green, the colour disappears on cooling. This mineral is found at Taberg and Nordormken in Sweden, traversing beds of magnetic iron-ore. It is stated also to have occurred at Reichenstein in Silesia. Analysis by Klaproth:

<table>
<thead>
<tr>
<th>Component</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silicon</td>
<td>33.98</td>
</tr>
<tr>
<td>Carbonic acid</td>
<td>24.98</td>
</tr>
<tr>
<td>Magnesium</td>
<td>13.85</td>
</tr>
<tr>
<td>Potassium of iron</td>
<td>13.61</td>
</tr>
<tr>
<td>Water</td>
<td>10.00</td>
</tr>
</tbody>
</table>

100% 90

PICRONSINE, a mineral which occurs crystallized and also massive. It forms a right rhomboide prism. Fracture indistinct, uneven. Hardness 2½ to 3. Nearly opaque. Lustre dull; vitreous. Colour greenish white, or sometimes dark green or even blackish. Streak white and dull. Specific gravity 3.86 to 3.88.

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, granular to compact.

Found in the iron-mine of Englesburg near Perns in Bohemia. According to Magnus, it consists of:

<table>
<thead>
<tr>
<th>Element</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silicon</td>
<td>24.98</td>
</tr>
<tr>
<td>Magnesium</td>
<td>33.34</td>
</tr>
<tr>
<td>Potassium of iron</td>
<td>1.39</td>
</tr>
<tr>
<td>Potassium of manganous</td>
<td>0.42</td>
</tr>
<tr>
<td>Water</td>
<td>3.70</td>
</tr>
</tbody>
</table>

97.33

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 picrotocin are, that its crystals are usually acicular, but sometimes filamentous, in plates and in hard granular crystals. It is intensely bitter, is soluble in 150 times its weight of alcohol, and 22 times when boiling. Alcohol of specific gravity 0.810 dissolves one-third of its weight, and sulphuric ether of the specific gravity of 0.77 takes up two-fifths of its weight; in oils it does not dissolve.

It does not act upon test papers, this 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, but the alkalies dissolve this property, to a considerable extent, and it is precipitated from them by the addition of acids.

According to Pellerini and Courbe, it consists of:

<table>
<thead>
<tr>
<th>Component</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrogen</td>
<td>5.69</td>
</tr>
<tr>
<td>Carbon</td>
<td>0.01</td>
</tr>
<tr>
<td>Oxygen</td>
<td>33.09</td>
</tr>
</tbody>
</table>

100.
interpretation of both names has been given which is at least ingenious and plausible. "The name "Caledon," says Dr. Davis, "derives evidently from Caedwalla, of the wood, modified by Roman pronunciation. The term Ducaledonaeis attended with no difficulty. Dychuadaidh signifies, in the Gaelic language, the hug, a dog, a beast, whereas Du, in the northeast, signifies real, genuine; and in this acceptation the word is a common use: Du Erinnach, a genuine Irishman; Du Albinnaich, a genuine inhabitant of Albin, who is used to distinguish the inhabit-
ants of the woody valleys of Albin, or Scotland, from those of the cleared country on the east coast of Albin, along so whole extent, to certain distances which point towards the interior parts of the country. These last were denominated, according to Latin pronunciation, Vectu-
riones; but in the mouths of the Gael, or native inhabitants, this appellation was used. Uschaddrach. ... a portion of the country was known in ancient times by Uchadar is

rivized by the name of the well-known range of hills called Drium-Uachtar, from which the country descends in every direction towards the inhabited regions on all sides of that mountainous country. ... Although however Marcellinus thus appears, as well as Eumenius, to regard the Caledonians as only a tribe of the Picts, it is probable that this is a mistake, arising naturally from the extent of the country which had been acquired by the latter. The Vecturiones in all probability were the only true Picts; the Dicadonae were another race altogether.

Then it is clear in how far we are to understand the Roman writers as meaning at all the same people we now call the Picts by their term Picti. That term seems always to have been used by them in the sense simply of people, by which any part of the population of the north of Britain was considered as distinct from the rest, being an appellation somewhat resembling this term Picti, the Ro-
mans, with their usual carelessness as to such matters, would readily enough employ Picti as their translation of the native name, and, even although the poets particularly indicated in the first instance might be remarkable among their neighbours for their superior civilization and for not painting their bodies, would still retain in that application the epithets which it had acquired by the latter, in other words, to extend it as far over other tribes, no matter how different in real character and origin, as that notion would seem to justify. We believe this to be the actual history of the use of the word Picti, and to account for the introduction of the word into British and modern Welsh as a remnant of the Picts. This was the opinion of the judicious Camden. If the Welsh, who have always called themselves Cymry, are the Cimbrii of the an-
tiquity, it is now evident that this lineage has no 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 oc-
cupied not only the Orkney Islands and the Hebrides, but the whole of the coast of Ireland, and also 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 extent of territory. But Camden expressly states that in his time the English held possession of the Pictish province in which stood Auckburncugir, now Abercorn, in West Lethian, the seat of one of their bishops. Here too was Penafore, now Kinneil, and Edingburg farther to the east, on the same side of the Firth, is also de-
scribed 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 Frith of Firth to the south, and to the west by the mountainous range still separating the Lowlands from the Highlands of Scotland. The king-
dom of Strathclyde, however, is, or Reged (that is, the kingdom, by way of pre-emption), as it was un-
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 on the hypothesis of the Picts to have been the same people with the Welsh, the latter being admitted on all hands to be of the same race with the people of Strath-Clyde.

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

2 It is remarkable that in Anglia, and the other countries on the north-east coast of Scotland, the Picts were long accounted as a distinct people, but this has now been considered to be (as it is still characterized by the peculiar FIG. 8. of the inhabitants) for the same reason, and in the same way, that the people of the Netherlands are just, as their Pictish counterparts for Penguill and Peanillo or Pendail.
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 entitled Pictical, extending from the foundation of the monarchy by Cruithen, or Cruidein (whence the Irish name for the Picts), about A.D. 28, through a succession of thirty-six kings, ending with Taelore I., A.D. 414; the second, styled Historical, extending from Taelore to Kenneth III., A.D. 937. 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 establishment of these new settlers in the country about the beginning of the sixth century. Bede and Allard state that the Southern Picts were converted to Christianity by St. Ninian about the year 418; 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 Whithorn, in the reign of Constantine. The Southern or Northern Picts are 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 overthrown the whole of the population of 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, for the first time, united the whole of North Britain into one monarchy. The oldest authorities for this account are the Chronicum Regum Pictorum, written apparently about the beginning of the eleventh century (it contains the story, which is a Bible history), the Annals of the Innis in 1729; and the Register of St. Andrews, written about 1130. On the other hand it is extraordinary that no allusion should be made to any revolution as having taken place in Pictland about this time, either by Nennius, 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 by all the continuators of the annals of the Picts in 875; by the Saxon Chronicle, by Ethelward, or by Ingulfus, who, in the tenth and eleventh centuries, all continue to speak of the Picts as an existing people; by the Irish annalist Tigernach, who wrote about 1006; and who cannot have known of the chronicle of the Pictish kings, among whom he 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 by the more genealogical annalists, who, under the name of Kenneth or Canmore, called the Gaelic or Albanic Duan, belonging to the reign of Malcolm III. (1056-1093), 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 chroniclers would have us believe was the general effect of the establishment of the nation, and indeed to the utter extirpation of that people from the soil of Scotland. Nevertheless, the fact remains unquestionable and undoubted, that Kenneth II., or Ken-

and that object was in fact accomplished, and the whole of what is now called Scotland brought (nominally at least) under one rule, in the year 975, under the reign of his great-grandson Kenneth III. Even down to a considerably later date than this however, a great part of the north-east of Scotland appears to have been actually held by Nor-

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 Pechts, live in the traditions of the country as a people of almost superhuman strength and longevity. This would seem 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 pre-

vailing 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 Picts: but these curious monuments are not received by the inhabi-

tation they deserve, and whether they are Pictish or Nor-

weigan princes, who did not acknowledge the sovereignty of the descendants of Kenneth Macalpin; and even some of the great Highland chiefs of the west long continued to maintain almost as substantial if not as openly avowed an independency.

(An account of all the principal works relating to the Picts and the other ancient inhabitants of Scotland which had appeared down to the date of its first publication in 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 most valuable of these works was one written by Sir George Chalmers, Esq. 3 vols. 4to., London, 1807-1824; "Rerum Hibernicarum Scriptores," Vol. I., ed. by C. O'Connor, D.D. 4 vols. 4to., Buckingham, 1814-1826; "Memoirs of the Celts, or Gaels," by Joseph Ritson, 8vo., London, 1827 (but written before 1808), in the appendix to the History of the Celts, or Gaels, by R. H.受理. Catholic Antiquities, extending to above 200 titles; "Annals of the Caledonians, Picts, and Scots, and of Strath-clyde, Galloway, and Murray," by the same, 2 vols. 8vo., Edinburgh, 1829 (also written before 1803); Dr. Pit-


PICTURE. [Painting.] PICTURENSQUE (in Italian PIttoreesco, painter-like or picture-like, and expressed in German by the word Malerischen, which is of exactly the same import) is that quality which peculiarly recommends objects for picto-

rial 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 picturesque character of an object; and, by a consequence of the degree of relief or illusion which generally will 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, by means of form under which, which, and by a certain degree of relief or illusion as such represented in painting, although in themselves, or taken separately, may appear monotonous. Hence, provided any object presents that variety to the eye which the artist requires in order that the object in the picture may be represented not only by a certain degree of relief or illusion, but not how unPicturesque it may be when openly viewed, or though it should possess in itself none of those qualities which are commonly insisted upon as essential to the picturesque. The idea of new vision both of Mr. Lil-

who is generally referred to as an authority upon this.
subject, instead of being picturesque, disqualify the object in which they reside from any pretensions to picturesque beauty by which they ought to be qualified and distinguished 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 disqualification, are selected by the artist as the most beautiful and admirable for his purposes. Simplicity of quality of satin and velvet; and the idea of smoothness, it may be presumed, and generally of uniformity of colour also throughout the material, is excelled in the beholder; but then, in order to produce such appearance in pictures, a great number of tints 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 modifications which the actual colour of the same object receives from light, which in the one case 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 were cut out, it would appear only a rough blotted surface, like the stains on a weather-beaten wall, than which it is no less picturesque, and for the same reason, namely, on account of the variety and irregularity it presents to the eye in the breaking of the colours: 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.

A similar appearance is especially 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 in beauty and which almost always lead us through what, whether they are beautiful in themselves, are far from being deficient in picturesque quality. It is true there are also a few that are eminently delightful or beautiful in nature, yet become insipid in representation; but that is because they are deficient in the variety of colour and form which picturing demands. A level well-kept lawn presenting a uniform surface rich of 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 the nature of a monotonous and 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 light and shade, and the gradations of colour, which may convey the idea of being a piece of neatness of a very pitch but to be vested of its monotonity, and may even become picturesque, if it should produce a good contrast to other parts.

The same theory holds true with respect to forms. 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 in elevation, a structure which is symmetrical will produce a formal and lifeless appearance: but then there is no occasion for its being so exhibited; on the contrary, by means of judiciously foreshortening or perspective, of shadows thrown upon it so as to break up pencil, and to produce a practical effect.

In the same way, objects associated together, if parallel to the picture, it will undoubtedly be formal and monotonous, but if it is shown obliquely and from a near distance, so as to be considerably foreshortened, though we still perceive that it is precisely in the same 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, that the mass of light and shade is alone sufficient to remove whatever monotonity might else exist.

Therefore, although the term picturesque is applied, by way of distinction, to that class of objects which are occasionally found for his purposes.

Punctum, M. Temminck's name for a genus of birds placed by Mr. Swainson in his sub-family Ducnetum, or Bur. Punctum, M. Temminck's name for a genus of birds placed by Mr. Swainson, the habit of Anoplura, Sw.; but the rectus is bristled, and the tail very short, and not projecting beyond the wings.

Piumm, M. Temminck's name for a genus of birds placed by Mr. Swainson in his sub-family Ducnetum, or Bur. Punctum, M. Temminck's name for a genus of birds placed by Mr. Swainson, the habit of Anoplura, Sw.; but the rectus is bristled, and the tail very short, and not projecting beyond the wings.

Piumm, M. Temminck's name for a genus of birds placed by Mr. Swainson in his sub-family Ducnetum, or Bur. Punctum, M. Temminck's name for a genus of birds placed by Mr. Swainson, the habit of Anoplura, Sw.; but the rectus is bristled, and the tail very short, and not projecting beyond the wings.

Piumm, M. Temminck's name for a genus of birds placed by Mr. Swainson in his sub-family Ducnetum, or Bur. Punctum, M. Temminck's name for a genus of birds placed by Mr. Swainson, the habit of Anoplura, Sw.; but the rectus is bristled, and the tail very short, and not projecting beyond the wings.
Pie

In the last century the House of Savoy became possessed also of the extensive district called Novarese, which was formerly part of the duchy of Milan. [Nov.

The country of Piedmont, generally speaking, is one of the most fertile, healthy, and pleasant in Italy. It produces corn, rice, Indian corn, wine, fruits in abundance, timber-trees, excellent pasture for cattle, hemp, and silk. Oil is not a produce of Piedmont. The system of irrigation has been practised in Piedmont and carried to consid-
erable perfection 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 other provinces of Sardinia. The chief part of Italy there is so great a proportion of considerable towns containing from 3000 to 10,000 inhabitants. For further statistical details, see SARDAIGN STATE.

The inhabitants of the various districts included under the general name of Piedmont, although possessing shades of character, have many common traits of resemblance which characterise them as a nation distinct from their neighbours of Savoy, Genoa, and Lombardy. They all call themselves Piedmontese, and at times also Subalpini. They are generally a well-made race of man, spirited, warm-hearted, brave and highly susceptible of military discipline, and have always maintained the reputation of the people of Italy. They are also loyal, frank, attached to their country and their sovereign, though by no means servilely disposed; they are religious, and the lower orders even superstition. The country population is much under the influence of the church. They are not, as a rule, highly critical or in pairs, and are not so petulant as the people of their origin. The Piedmontese numerous, consist chiefly of landed proprietors with a moderate rental, most of whom live in their respective pro-

vinces. The Piedmontese are susceptible and hasty; they are fond of conviviality, and are less distinguished for soberity than the rest of the Italians, but they are also industrious and hospitable. Less poetic than the other Italian nations, they are more disposed to the positive and practical side of life. Modern Piedmont has produced many men of science, mathematicians, engineers, good generals, natural philosophers, historians, classical scholars, and philologists. In our own times, Alfierti, De- mina, Botto the best historian of modern Italy, the poet Silvio Pellico, the orientalist Peyron, the mathematician and astronaut Plan, and several others, deserve men-
tion.

The Piedmontese dialect, which is the spoken language of the people, is in some degree, with some shades of difference in the various districts, one of the most remote from the written Italian. It is in a great measure an offspring of the Romance language which prevailed in Southern Europe during the Roman dominion. It is distinguished from the Italian, the Franciadocian and other dialects of the south of France. The pronunciation is a mixture of French and Italian; it has the French sounds of w and v, which Alferi dis-

liked so much, but at the same time the Piedmontese retain the Italian sound of c and d of the c and of the j, and when they speak French they find a difficulty in pronouncing the c and the French j. The Piedmontese is also a written dialect, and is adapted for poetry. Calvo and others have written poems in it, and Brofferio has lately published a volume of Canzoni (Poesie Piemontesi del Medico Edoardo Culvo, Torino, 1816; Canzoni Piemontesi di Angelo Bro-

ferio, Lugano, 1839). A Piedmontese vocabulary, by Zalli di Canavese, was published in 1815; and a more comprehensive one has been published by Michele Ponzio, Torino, 1827.

Piepowder Court. [Pipowder Court.

Pier (from the French piers, standing for 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 springing-line to the crown). A reduc- tion of a structure generally consists of a series of mouldings, although some-
times it is merely a platband, and occasionally the impost is omitted altogether, especially in rusticated basements. For the sake of the brevity of the piers and the width 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 conse-

quently far 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 be a great measure upon the solidity required for the building and the weight they have to bear, and the height of the arch. Commonly the height of the piers, as far as the architect 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 grandeur. The practice in architecture except of solidity even approaching to heaviness and ponderousness, is far more tolerable 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, the arch is required in general to be much flatter; and the openings between them are of lofty or narrow proportion. In the external arcade or piazzas (Piazzas) 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 simi-
lar cases to treat them altogether as such, converting their imposts into pilaster or ante caps, as is occasionally done; for instance, in the arcade or loggia of the Southampton Railway Terminus at Vauxhall, where, but for such expe-
dient, the piers would look officially meagre.

Piers are frequently decorated with either pilasters or engaged columns, which case there are such that the archivolts and the order the arches spring from are entirely concealed by other pilasters or from their capitals or from an entablature over them. There are in the instances columns are substituted for piers, placed either singly or in pairs, and the arches springing from the columns are entirely concealed by other pilasters or from their capitals or from an entablature over them. There are in the instances columns are substituted for piers, placed either singly or in pairs, and the arches springing from the columns are entirely concealed by other pilasters or 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. Palladi-

o's Basilica, or Palace of Ragione, at Vicenza, affords an example of the kind, in which the faces of the piers them-
selves consist of half columns, and the impost is entire; the whole composition resembles a series of what are termed

arched Venetian windows entirely filling up the spaces be-
tween the larger columns. Besides these and other modes of decoration, niches are occasionally introduced as orna-
ments 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 dis-

called arches are always quite distinct 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, carried diagonally to the impost, or the impost itself broken up by capitals or horizontal mouldings to the shafts, yet sometimes terminating below in moulded bases; at others being carried across 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 abut-
ments. [Abutments.] The piers of bridges have no im-
post 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 embank-
ment to protect vessels from the open sea, or merely as a landing-place; for which latter purpose suspension chains of iron are now frequently employed.

Pie'ria. [Macdonia.

Pierre, Bernardin de St, born in 1737, after studying at Paris, entered the department of civil engineers under the government, or 'ports of entry,' spent some time in France. A redi-

нием, a portrait which took place some time after, left him unemployed, and he entered the army as a military engineer; but having quarrelled with his superior, he was dismissed from the service. He went to Malta with the promise of a commission, but it was not executed. 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
Being highly interested in the discoveries which were then being made by Spanish and Portuguese expeditions, 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 Magalânsen, he asked and obtained leave to serve under its command, and it is as a private soldier. The expedition sailed from S. Lucar in September, 1519. [Magalânsen.] 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 braved the艰险 of the seas, and escaped the diseases which destroyed most of the crew.

He was present at the landing on the Philippine Islands, where Magalânsen lost his life, and was wounded in the first attack.

He was with the expedition which landed in the only one that remained out of the five which had sailed together. He landed at Seville in September, 1522, having performed in the course of three years the first voyage around 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 Valladolid, where he presented a copy of his journal to Charles V. Pigafetta afterwards returned to Seville and, at the request of Pope Clement VII, he wrote the following narrative of his voyage, with a description of the strange counte

Pigafetta's book was 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 in Milan, in Laden con la bussa in torno al Globo," 4to., Milan, 1800, with plates, drawn from the maps and sketches which accompanied the MS. Pigafetta's was the first account that Europeans had of the islands in the Pacific Ocean. Of Pigafetta's personal history after his return to Italy is little known; but he was made a knight of the order of St. John. His house was still seen lately in his native town of Vicenza.

Pigeon pea is the seed of the plant called, by Linnaeus, Cypis Cajan, and by De Candolle, Cajanus bicolor and flavus. It is a kind of pulse highly esteemed by all classes of the natives of India, and is regarded as holding the third rank among such articles of food. Cattle are said to be fattened with the tender parts of the plant either green or dry. These two species, or varieties, form bushes resembling shrubs, but, according to Roxburgh, they seldom live more than two or three years, even if treated with the greatest care. The natives of India sow them annually, because they do not bear well the second year after the first crop; they pull the plants up for firewood. Cajanus bicolor grows from six to eight feet high, ripening its seeds in about nine months from the time they are sown, and producing about 600 fold; the other is much smaller, and yields in three months, but not more than 100 fold. The Telinga name of the first is Pedda Candi, and of the grain Pedda Kandilo. (Roxb., Fl. Ind., iii. 325.)

Pigeons. [Columbidae.]

Pigghius, Stephanus Vinand, born in 1520, at Kempen in the province of Overyssel, in the Netherlands, was nephew, on his mother's side, of Albert Pigghius, a learned Romanist and professor of theology, who wrote against the Lutheran heresies, and wrote against the Lutherans. Stephen Vinand, after studying in his native country and at Cologne, entered the ecclesiastical profession, and repaired to Rome, where he was immediately received on account of his uncle's reputation (his uncle being then dead), in 1575. The name of Pigghius is that of Rome, and Pigghius returned to his native country, and retired 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 Romanorum," 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 Magistriatum et Provinciarum S.P.Q.R. ab Urbe Condita, ex Academia Antiquitatumque varia monumenta suppleti; in quibus Reipublicae Mutationes, Potestatatem ac Imperiorum Successiones, Acta, Leges, Bellis, Clades, Victoriis, Manibus atque Triumphs, neon inflamuit Stia, sensumque curiosi animi, sodalesque reducturus,' 3 vols. folio, Antwerp, 1615. Pigliusi gives 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, census, sediles, quaestors, praetors, proconsuls, c. c., and wherever their names can be ascertained from ancient writers or monuments. He also notes briefly the principal events of each year, carefully quoting his authorities. Wherever an inscription or fact is broken by his narrative, he cites the title of the principal laws and senatus consulta, under their respective years. It is altogether a vast research and erudition, which cost the author more than twenty years' labour. His chronicle is found faulty, as most Roman chronologies are. (See Fortia d'Urban, in the French edition of Tacitus, by Dureau de Lamalle.) Pigliusi also published a good edition of Valerius Maximus, liber alius, 1605.

PIGNETUM NIGRUM. [Erysa.]

Pignero, or Pinerolo, a province of the Sardinian system, bounded on the east by the province of Turin, on the south by that of Saluzzo, on the north by the province of Susa, and on the west by Mont Genevre, which divides it from France. It is a mountainous region, being covered by offsets of the Alps, which form several valleys, through which flow the Chisone and other affluents of the Po, forming a genus, but in modern works is not known to constitute a family. They have no adipose fin, as in the Salmonidae, and are distinguished by the upper jaw being formed chiefly by the intermaxillary bones; the maxillary is destitute of teeth, and covered with a thick skin; the dorsal and anal fins are almost always opposite each other, and their intestine is short and without cæca. To this family belong the genera Esox (or pike proper), Galaxias, Alepocephalus, Micropterus, Elopomorphus, Scymnus, Scombresox, Hemiramphus, Exocoetus, and Mormyurus.

In the genus Esox the snout is broad and depressed; the intermaxillary forms about two-thirds of the upper jaw, and are furnished with small pointed teeth, as well as the lower jaw; the vomer, palatines, tongue, pharyngeals, and branchial arches; there is one dorsal fin, and that is placed opposite the anal fin. The Esox Luctus, or common pike, is found in the fresh waters of most parts of Europe, and Cuvier moreover states that it also occurs in North America, where however two other species are met with. Mr. Jenyns states that the common pike is probably indigenous, and is usually found in the large lakes of England and France, during the reign of Henry VIII. It spawns in March and April, and occasionally attains a weight of thirty, forty, or even sixty pounds. The pike is one of the most voracious of fishes, and, it is said, will eat those of its own species.

The genus Galaxias, founded by Cuvier on the Esox alepidotus of Forster, and Esox tructatus, Cuvier, differs chiefly from Esox in having nearly the whole edge of the upper jaw formed of the intermaxillaries; the body is apparently destitute of scales, the mouth slightly cleft; moderate and pointed teeth are observable in both the jaws and also in the palatines, and there are a few strong hooked spines on the head. It is found in the Mediterranean, and in the Black Sea, and is called the Serpe microstoma of Risso; it has a very short snout; the lower jaw projects beyond the upper one, and is furnished, as well as the small intermaxillary, with minute teeth; the body is covered with a series of narrow, flat branchiostegous rays; 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 ventrales.

VOL XVIII.—X
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, the pectoral fin reduced to a small membranous lamina, and the maxillaries fixed to the cheek; the maxillaries, intermaxillaries, palatal bones, and tongue are all furnished with long and curved teeth; 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 the opposite with the mouth shut, each pair having its own elongated (if present) plate opposite the space which intervenes between the pectorals and ventrals.

Only one species of this genus is known; it is fifteen or eighteen inches in length, and of a very green colour. The species, which is the Chauliodus Stomis of Schneider, is found at Gibraltar.

The species of the genus Salanza (Cuv.) are distinguished by their depressed head, the opercula folding beneath; four branchial slits, which in the Chauliodus Slanits of Schneider, is found at Gibraltar.

Belone.—This genus is established by Cuvier upon the Esox Belone (Garfish) of Linneus, and some other species differing from the true pikes in having the jaws much elongated and the upper one of the upper pair is formed 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 paling stones; the body is much elongated, and forms the scales, the pectoral fins are very small, however, are indistinct except on the lateral line. [Garfish.]

Scorbuticeps.—In this genus (which is instituted by Ladepépé), as in Belone, the body is long and slender, the jaws short and slender, 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 symphysis.

Belone.—This genus is established by Cuvier upon the Esox Belone (Garfish) of Linneus, and some other species differing from the true pikes in having the jaws much elongated and the upper one of the upper pair is formed 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 paling stones; the body is much elongated, and forms the scales, the pectoral fins are very small, however, are indistinct except on the lateral line. [Garfish.]

Scorbuticeps.—In this genus (which is instituted by Ladepépé), as in Belone, the body is long and slender, the jaws short and slender, 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 symphysis.

Belone.—This genus is established by Cuvier upon the Esox Belone (Garfish) of Linneus, and some other species differing from the true pikes in having the jaws much elongated and the upper one of the upper pair is formed 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 paling stones; the body is much elongated, and forms the scales, the pectoral fins are very small, however, are indistinct except on the lateral line. [Garfish.]

Scorbuticeps.—In this genus (which is instituted by Ladepépé), as in Belone, the body is long and slender, the jaws short and slender, 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 symphysis.
more or less thick calcareous support, on which the animal is attached by the same horse-shoe-shaped muscle which is inserted in the shell. The animal of Hippoxynx then remains necessarily attached, after the manner of the Capules and Cranmer, to submarginal bodies. This manner of life in a cephalopod mollusk, and the property which it possesses of being able to slip off its shell at any time is a resemblance to a bivalve shell without a hinge. This support, too, in some species, diminishes insensibly in others, and sometimes becomes very delicate. M. Deshayes states his knowledge of certain species which, instead of secreting a support, attach themselves to other shells or other substances to some extent in 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 Cleopatra, it is difficult to draw a clear line; for the margin of this impression is sometimes more or less raised in a somewhat horse-shoe form, apparently corresponding to the muscular impressions in the lower valve of Hippoxynx. We think this peculiar form may be caused by the contraction and expansion of the nearly circular foot in raising and depressing the shell, in order to permit the entry and egress of the sea-water. There is much in this worthy of consideration; and we should remember that the author was not aware of the discoveries of the French voyagers, which have led to such a different conclusion, and, in short, to a confirmation of the original view of the Dutchman as to the relative place of Pileopsis and Hippoxynx in the system.

M. Deshayes, in the last edition of the Animaux sans Vertèbres, remarks, that in treating of the Pteropods, he had pointed out the error of Lamarck in considering them as a new class. In the present work, he declares that the Mollusks properly so called. M. Deshayes thinks, in accordance with the opinion of M. de Blainville, that if there exists a passage between these two classes of mollusks, it is to be looked for in the genera Pileopsis and Hippoxynx. The greater proportion of students in conchology, he observes, who for the first time compare the genera Crania [Brachiopoda, vol. v, p. 314] and Hippoxynx, find a great resemblance between them and consider them to be allies. But the relations which exist between the shells not being continued in the animals which inhabit them, it becomes necessary for them to abandon this supposed approximation, on the ground that one of the genera (Crania) belongs incontestably to the Brachiopoda, whilst the Hippoxynx are true cephalopod mollusks. When the organization of the Hippoxynx is compared with that of the Aceantha, the observer finds with surprise that the peculiarities of both animals exist in reality between these two classes of animals.

The short description, continues M. Deshayes, given by Couvier, in the Annales du Muséum, of Pileopsis, is the only one which has numerous authorities who cite. Under the name of Pileopsis, a fish, we may be seen, in certain individuals of the Pileopsis Ungariæ, irregularities proceeding from the body on which it has lived when young continuing exactly the same to adult age—irregularities whose true cause remains unknown. That the vegetable wax in which the young pond of M. Deshayes, that during its whole life the animal has never changed its place. This mode of existence approaches closely to that of Hippoxynx. The latter, however, cannot be made to correspond with the former, as it is of such a figure that no rotation can take place. The Hippoxynx, another Gasteropod, forms caverns in the shell and other shells to which it adheres.

M. Swainson {Mammalogy, 1831, places both Pileopsis and Hippoxynx in the Tribe Scapharca, or Limpetes.

\*Quota lemma: \text{and} be in mind the agency of exuviae of water produced by the action of cilia.\text{[Lituripuamid, chapel, &c. See also post, p. 105.]}\n
\*Note. The suspicions of Dr. Spray that Hippoxynx had a volvular support were confirmed only by his finding the two valves together on the outside of a Craniætrix shell. But this is not the case, as we shall presently see. The true value of Hippoxynx remains.

M. G. B. Sowerby states that about the same time he was almost convinced that the same foot by the examination of the one valve and a companion which I had previously described between them and some specimens of Ostryx and Otryx which I had just then fallen into his hands.

It is now set down a popular fact that, if not all of them, with the exception of Cyrtis, are dioecious.
He makes the genus *Hipponyx* succeed the genus *Emargi- 
num*, and gives *Hipponyx* and *Pileopsis* as subgenera of 
the former.

*Hipponyx*. (Defr.)

**Generic Character.**—Animal oval or subcircular, conical, 
or compressed; 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 
smalr lateral teeth; foot very delicate, thickened towards its 
edges, which lessen and enlarge like those of the mantle, 
by which it bears a complete resemblance; branchiae situ-
ated 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 impres-
sion in the form of a horse-shoe; a rounded lamellar sup-
port, 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*, *foliacea*, and 
*suturalis* of M. Quoy; the first from the seas of New 
Holland and the two last from the island of Guam in the archi-
pelago of the Marianne islands. To these, 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, thickly striated longitudi-
nally, the margin crenulated, violaceous; the vertex 
long, acute, and straight; white internally.

**Locality.**—The seas of New Holland.

**Pileopsis.** (Lam. Capulus, Mont.)

**Generic Character.**—Animal conical, slightly spiral at 
the summit, furnished with a distinct head which has a pro-
sobus terminating the mouth; in front of the anterior border 
of the foot is a double membrane bearing 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; mantis 
simple and without ornament; branchial cavity open ante-
riorly; branchiae composed of many narrow and longitudi-
nal laminae, which adhere by a single transversal line to the 
pterygoid; 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-
rine, and has been taken adhering to stones and shells at 
depth 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*, 
noted as recent and fossil (tertiary); the number given 
in the last edition of Lamarck is six, to which, as we have 
seen, *Patella Galathaea* and *triostata* are to be added.

Example, *Pileopsis Ungarica*.

**Description.**—Shell conico-ascinuate, 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 Hipponyx acuta and 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. dilatata*; 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, Tour-
raine and Turin. 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 and Pileopsis](Image)

* Pileopsis is generally considered to be feminine,
die Ludlow rock, records the only imperfect specimen yet obtained from the Astemey limestone: the aperture appears less expanded than in the *Pleopaga vetula* of the carboniferous limestone. (*Silurian 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 Claincey, in the province of Le Nivernais, which is now the department of La Nièvre. He was brought up in the midst of 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 him from devoting himself entirely to his art. Having been engaged by president Amelot, in 1662, as 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 Dufresnoy, whose Latin poem on painting he translated into French, 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 1665, and to Switzerland in 1669, 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 nations of Europe. While he was a part of 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 the English in behalf of his master. 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 to Madrid, but, very indifferently, the climate of Spain did not agree with him, and he was obliged to return to Paris, where he died on the 5th of May, 1709.

In the course of his travels, he sometimes 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 chiaro-scuro, and was expert in painting portraits of the noblest figures of his age, with esteem, 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 sometimes required him particular indulgence. 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 his works were published in 5 vols. 12mo. He likewise composed *Abrégé de l’Anatomie accommodé aux Arts de la Peinture et de Sculpture,* Paris, 1667, fol., with plates, all after Titian. (*French Bio.-Graph.*)

**PILGRIM** is the name given to a person who travels for the purpose of visiting the shrines or tombs of holy men, and the act itself is called Pilgrimage. The words pilgrim in English, *pellegrino* 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, which are included in the general name of the *Holy Land,* belong at an early period, probably about 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 custom of pilgrimages, especially by those, who, he observed, were particularly exposed during a long and toilsome journey through countries like Syria, notorious for licentiousness of manners. He adds, that *pilgrimages are not easy to enjoy the same profit that they are more abundant at Jerusalem than elsewhere; that grace is obtained by faith, and not by change of place; that were grace so plentiful at Jerusalem as people seemed to fancy, the indulgence, and not the indulgence, instead of which, all kinds of sin were common amongst them, especially murder and lasciviousness.* He ob-

serves that he himself had been once to Palestine, but it was on a mission of his ministry to the churches of that land and the neighbouring country of Arabia, and that he had a con-
voy provided by the Imperial officers for him and his attendants; but, he adds, I found that my faith was neither increased nor diminished by the sight of the Right of Beth Yahud and the Mount of Olives. *As I believed before in the mysteries of the Revelation, so I still believed after my visit.* There is much sober sound and solid religion in this letter, which is quite in accordance with the general character of the *History* of Nyssa. Some however have endeavoured to doubt its authenticity; but the letter is quoted among the works of Gregory by Lippomannes, bishop of Methone, in his *Lives of the Saints. *It is one of the works of Gregory in an old codex in the Royal Library at Paris; and this account of Gregory’s mission to Jerusalem is the same that is mentioned by him in another epistle to Olympius on the death of his sister Marcina. (*Gregorii Episcopi Nyssae de euentibus Hierosolyma Epistula,* a Latin translation by Stephanus, Paris, 1606; and again with notes, by P. Molines, 1607.)

The opinions concerning the pilgrimages contained in this epistle are in accordance with those expressed by other fathers of the church. St. Augustine says:—‘The Lord did not say, Go to the East to seek justification; or, Sail to the West to obtain forgiveness. But he said, Forgive thine enemy, that thou mayest obtain forgiveness;’ I ask nothing of thee which is not within thee.’ (*Sermo III., de Martiribus.*)

Chrysostom, in his Homily I. to Philemon says:—‘In order to obtain forgiveness of our sins, it is not necessary to embrace monasteries, or to journey to distant lands, nor to undergo bodily labours and dangers; but an act of sincere will alone is required.’ and Jerome, who was rather an advocate for visiting the Holy Land, yet observes, in his letter to Paulinus, that the temple of Heaven can be attained from Britain as well as from Jerusalem. Anthony and the other holy monks of Egypt, Mesopotamia, and Armenia, have never visited Jerusalem; and the blessed Paul of Thessalon ium, although he only visited Jerusalem once in his life. It is not according to places, but according to the internal faith that men are judged.

In the course of time the practice of pilgrimage increased, and extended to other places besides Palestine. People resorted to the shrines of St. Peter and St. Paul at Rome, to that of St. Iago do Compostella in Spain, of St. Gregory of Tours in France, and to the mystery of Einsiedeln in Switzerland, to our Lady of Loreto in Italy, to the tomb of Thomas à Becket at Canterbury, and to several other places.

The use of pilgrimages appears to have been introduced into the Spanish Peninsula about the eleventh century. The pilgrims went to the shrine of some saint, always on foot, and usually in the garb of penitence. ‘The most antient pilgrimage was to the shrine of St. Iago, to which pilgrims from all parts of Spain went. The second religious journey was to Rome, to visit the sepulchre of St. Peter, and was then called ‘Romeria,’ a custom which may be referred to the eleventh century. The pilgrim to the holy city of Jerusalem, a journey undertaken by few in Spain, except those who wished to alone for some heavy crime, was called a ‘palmer,’ from the palm-leaf he bore in his hat, just as the pilgrim who had been to Com-
postella bore the scallop shell. This is doubtless to the influx of so many strangers from all parts that Spain is indebted 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. (*Crusaders.*)

In the west, the celebration of the Jubilee perpetuated the custom of pilgrimages to Rome. The institution of the Roman Jubilee is due to a document 17th July, 1300, 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 since, those who should visit the church would obtain an antient record for the grounds of this report, and he interrogated a man 107 years old, who told him that in the year 1200 his father, a labouring man, had gone to Rome to get the indulgence, and had died a few days before the next centenary, to follow his example. Some other old men in France and Italy confirmed this tradition. After cou
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 hundredth 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, 1306, and every other centenary year after.' This is the origin of the festival which was afterwards called jubilee. Fifty years later the pope, in 1350, induced the popes of its recurrence to half a century, and styled it jubilee in commemoration of the jubilee of the Jews, which was celebrated every forty-fifth year, when all slaves became free, and all lands returned to the Jews. This jubilee began at Christmas, 1350, 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. Petrarch, 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 1356, at which time the nobility, and especially the great ladies, from distant parts came. It appears that these ladies came by the road of the Marchesa, 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 other robber barons of the same nature run amuck. The pope, it is added, 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.' (The Pellegrinate, p. 329.) Since the jubiles have not been reported to have befallen those ladies who in former ages resorted to Palestine, when pilgrims were exposed to insults and even violence.

A number of foreigner whores resorted to Rome in 1356, not 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 'Penitentiari,' or confessors who understand the principal languages, and who, 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. 52), says that on the occasion of the jubilee of 1356, all the Romans had become stable-keepers, that they charged enormously dear for everything, and that there was great scarcity, which added to the fatigue undergone by the poorer pilgrims, and the host of the Increasing season thinned their numbers to a fearful extent. The cardinal Cecchino, 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 popes found, and so irritated the people for dimming their chance of gain, that they obliged him to run away from Rome, and he died on the road to Naples, it was said of poison. (Pata di Rienzi, fol. 167; Matteo Villani, b. i., ch. 55.)

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 XIII. 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 receiving and feeding these pilgrims is however described 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 these former privileges, many notices are found in the ancient chronicles, especially those of the Crusades. Chaucer, in his 'Canterbury Tales,' has given sketches of the pilgrimage to Thomas à Becket's shrine. Henry Watson was confessing, and being repented by land. The ambiguous wrote 'Travels of Two English Pilgrims to Jerusalem, Gaza, &c. For other particulars see Compostela; Loiret.'

The Mohammedans have also their pilgrimages. According to a precept of the Koran, 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 Burckhardt, All Bey, and Planart. (Histoire de la Régeneration de l'Egype sous Mehemet Ali.) There are also sanctuaries for the Mohammedans of the sect of Ali at Musher in Khurasan, and Koom in Irak Ajiem. which contains the tomb of Fatima, the sister of Iman Reza, which are visited yearly by numbers of Persian pilgrims.

The Hindus also have their places of pilgrimage, the most celebrated being the Ganges at Benares or Allahabad, the tank at Badagerry, the tank at Shingna, the coast of Orissa in Coromandel, 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 animal, probably a buffalo, which is dragged along by the devout multitude amidst crowds of pilgrims who resort thither from every part of Hindustan. The procession is attended by dancing girls and dissolute young men, who perform a ceremony, 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 trifling.

The Japanese also are said to have their pilgrimages to the temples of Xinte or Xaco, of which accounts are given by Thumberg and other travellers.

PILING OF SHOP, 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 another fourth; but more than four can be placed together so as to touch each other and support one more. Hence arise two distinct methods of piling 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 $1+2+3+\cdots+n$, or $\frac{n(n+1)}{2}$. The number of interstices in which other shot can lie is $1+2+3+\cdots+n-1$, or $\frac{(n-1)n}{2}$. If such a pile be completed until one shot stands at the vertex, the pile will be $n$ layers high, and counting from the top, the layers will severally contain 1, 3, 6, 10, \ldots, $\frac{n(n+1)}{2}$, of which the sum

$$\sum_{n=1}^{n+1} \frac{n(n+1)}{2}$$

is the number in a complete triangular pile.

Let there be a rectangular base, say of 16 by 11. The number of interstices is 18 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

$$a(a+1)(2a+1)$$

If the base be a square, $b=0$, and the number in the pile is

$$a(a+1)(2a+1)$$

PILLAR. [COLUMN.]

PILLAU, a seaport in the circle of Pischausen in East Prussia, in 54° 39' N. lat. and 19° 38' E. long., was founded in 1772, 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 Friesche Haff. (FRISCHEN HAFB.) It is a place of considerable trade; the imports are too shallow to allow large or heavily laden ships to go up to Königsberg and Elbing, they are either lightened part of their cargo, or remain at Pillau, and the goods are conveyed to those ports by lighters (there is a river here), which also bring back the return cargoes. In the year 1839, 1420 ships cleared inwards, and 1459 outwards. Near to the town there is a strong fortress, which defends the entrance of the Friesche Haff. Besides the employment afforded by the maritime commerce, Pillau derives great advantages from the exportation of sturgeons, from the river of which caviare is prepared. About five miles from the Haff there is a fine forest of pine, which is called the Prussian Paradise. To the north-west of the town begins the so-called the Amber Coast,' this cire producing a greater quantity of amber than any other part of Prussia. In this circle too is the Kaporn heath, where els are still found. The winds on this coast often tear with the trees and drift the sand into heaps, so that the inhabitants are compelled to remove their
habitations from one place to another. Near to Pillau there are two villages—Old Pillau, where there is a lighthouse, and Pillau Vogel, where a lighthouse is being built for preparing caviar. (Swinin’s Handbuch; Müller’s Wörterbuch.)

PILLNITZ is a celebrated country-seat of the kings of Saxony, the usual summer residence of the court, near the village of Pillnitz. "Pillnitz" is a word of unknown origin. Pillnitz is situated in the Province of Saxony, 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 from Heinrich von Kurzau, and made it his residence. In 1706, the castle was entirely destroyed. Pillnitz is the residence of the Duke of Sachsen, the last of the old Saxon line. The castle was rebuilt in 1753, and now contains a magnificent collection of art. The grounds are also extensive and beautiful. The gardens are famous for their flowers and shrubs. The castle itself is a fine example of the Baroque style of architecture. The gardens are renowned for their formal layout and the use of water features such as fountains and canals. The castle is now a museum and is open to the public.

The form of the pillory as used in England in the time of Henry VII. was a circular, high, and tumbrel, with one or more of the criminals, as belonging formerly to seigneurs haut-justicaires. (Vogüe, Lois Criminelles de France, p. 66.)

The form of the pillory as used in England in the time of Henry VII. was a circular, high, and tumbrel, with one or more of the criminals, as belonging formerly to seigneurs haut-justicaires. (Vogüe, Lois Criminelles de France, p. 66.)

The form of the pillory as used in England in the time of Henry VII. was a circular, high, and tumbrel, with one or more of the criminals, as belonging formerly to seigneurs haut-justicaires. (Vogüe, Lois Criminelles de France, p. 66.)

The form of the pillory as used in England in the time of Henry VII. was a circular, high, and tumbrel, with one or more of the criminals, as belonging formerly to seigneurs haut-justicaires. (Vogüe, Lois Criminelles de France, p. 66.)

The form of the pillory as used in England in the time of Henry VII. was a circular, high, and tumbrel, with one or more of the criminals, as belonging formerly to seigneurs haut-justicaires. (Vogüe, Lois Criminelles de France, p. 66.)

The form of the pillory as used in England in the time of Henry VII. was a circular, high, and tumbrel, with one or more of the criminals, as belonging formerly to seigneurs haut-justicaires. (Vogüe, Lois Criminelles de France, p. 66.)

The form of the pillory as used in England in the time of Henry VII. was a circular, high, and tumbrel, with one or more of the criminals, as belonging formerly to seigneurs haut-justicaires. (Vogüe, Lois Criminelles de France, p. 66.)
The ancient laws of France contained provisions for the education and regulation of both these kinds of pilots (M. Métégor, Répertoire de Jurisprudence, art. 'Lamaneur et Pilote; Valve, Commentaire sur l’Ordonnance de la Marine du Mois d’Août, 1681, tom. i, p. 483) but they are not mentioned in the Code of Commerce. In England the term is almost exclusively confined to officers of the latter description. 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 France, 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 might engage his services. (Franc. des Rég. de Vannes, p. 444.) A similar provision is found in the Consolato del Mare. (Boucher, Consulat dela 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 by Acts of Parliament, and are incorporated; and in general the master of a ship engaged in foreign trade must put his ship under the charge of such a pilot, both in his outward and homeward voyage, within the limits of the regions thus provided for, and along the coast, from Orfordness to the Isle of Wight, excepting the jurisdiction of the Cinque Ports, which has been for several centuries under the management of the corporation of the town of New Market. The Cinque Ports have been from time to time passed 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. (21 Geo. IV. c. 125, which continues and 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 confluence of the Brasel and the Lysa, also the Brasel. Its length is in N. lat. and 15° 35' E. long. It is on the whole a well-built town, and the houses are mostly of stone. It has three suburbs, and 9,900 inhabitants. The most remarkable public buildings are—1. the fine Gothic church of St. Bartholomew (probably built by the Knights in 1292), with several fine paintings, and a steeple 180 feet high; 2. the elegant gymnasm; 3. the Gothic town-hall; and 4. the house of the Teutonic knights. Besides the gymnasm, there are a military academy, a philosophical and medical school, with six professors, and a lyceum. Pilsen has considerable manufactories of cloth and morocco leather. There are four annual fairs, which are much frequented by persons from all parts of the kingdom. The trade carried on in the town is extensive in the productions and manufactures of Bohemia, and in cattle, iron, potash, feathers, wool, leather, cloth, &c. A trade has been much increased by the exteriors of a patriotic joint-stock society, 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 with 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. The brisk trade, the fairs, and the presence of a numerous garnison, make this a very lively place. (Hassel; Stein; Oester. Encyc.)

PILIMUS, Dr. Leach's name for a genus of brachyuran crustaceans.

Generic Character. —External antennae setaceous, rather long, slender, inserted in the internal canthus of the eyes; internal antennae situated in the transverse fosset of the chopper. Third joint of the external jaws very nearly square, subtransverse, notched towards its end and internally. Second, third, fourth, and fifth pairs of feet terminal, slender, with ramifying claws. Transverse, Connect posteriorly. Abdomen of the females ellipsoidal and elongated. Ocular peduncles very short and larger than the eyes; a fissure at the bottom of the orbit above and below the eye.

This genus very much resembles the Crabae properly so called; but differs from them principally in the number of pieces in the abdomen of the male, and is removed from them still further by the mode of insertion of the external antennae.

M. Miete Edwards, who ranges the genera under his Cancroides Arcuatus [Ptyctacarcinus], is of opinion that Piliurnus approaches Xantho and Pseudocarcinus very closely. He divides the species, which are numerous, into several sections, according to the absence or presence of spines on the lateral-anterior borders of the carapace, and according to the granular or spiny external surface of the carapace.

Example, Pilimus hirtellus, Leach (Cancer hirtellus, Linn.).

Description. —Carapace with four or five denticles on its lateral-anterior borders; bands and carpus granulose above and externally; body pale yellowish mixed with brown or red in bands on the feet; both body and limbs bristle with brown stiff hairs. Size rather small.

Locality. —The coast of England and France: generally found under stones. (Leach, Malac. Brit. t. 12; Penn, Brit. Zool., vol. iv, p. 6, lower figure.)

PIMENTA, or PIMENTO, the produce of Eugenia Pimenta, a tree native of the West Indies, but cultivated almost exclusively in Jamaica, thence called Jamaica 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. The dried berries are nearly globular, 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 enclosed two or three drupes, about 6 French inches, 125, which contains also some general provisions respecting pilots in other parts of the kingdom. (Abbott On Shipping, p. 173, edit. 1840.)

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, might be injurious. The latter is similarly prepared 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 breaking an India pepper, while, if pure, is not disturbed by tincture of galls or acetate of lime, which cause a precipitate when cocculus berries are present.

The shell appears to be the most efficient part, and to retain more of the active principles. Bourostro obtained from them 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 carpytharin. By distillation of the oil is procured which resembles oil of cloves, and which conducts itself in the same way towards alkalies.

As an aromatic stimulant, pimento stands intermediate between cloves and ginger, which has partly on account of its greater cheapness, it may often be substituted.

It is useful in dyspepsia dependent upon the stomach, and in diarrhoea dependent upon a similar cause.

PIMPINELLA is the English name of the Ammiococum arvensis, a little red-flowered prostrate annual found in cornfields. It is often called the Shepherd's or Poor Man's Hour-glass: it opens its flowers every morning about ten minutes before the sun rises, and closes them a little later; and in 20 minutes after. If rain falls or the air is charged with moisture, the flowers do not open at all.

PIMPINELLA is a genus of umbelliferous plants inhabiting the plains and mountains of Europe principally, is chiefly interesting on account of its comprehending among its species the Anise of the shops. This plant is an annual, with a smooth stem 1 to 1 foot high; the lower leaves reduced, cordate, lobed, and both serrated and cut; those of the upper blade divided with wedge-shaped lanceolate segments, and the upper trifid, with the lobes undivided and linear. The flowers are small and white. The fruit is narrow and slender, rather hairy, with 5 filiform ridges to each mericarp. The perennial species is employed in vermifuge medicine, and for the purpose of flavouring liqueurs. The plant inhabits Egypt and the islands of the Grecian archipelago, especially Ski wards. Of Artemisia, formerly referred here by mistake, mention has already been made under DILL.
PIMPINELLA A'NISUM. [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 practical application of the doctrine of 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 some of the facts and illustrations in this subjoined paragraph.

It is not known at 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 'for curing the abuse and abuse of the inu'tuation, or true Making of Pyntes,' in which, after stating that much deceit had been practised in the making of pins, 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 shafts, 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 is much increased; they are prepared, however, for the most part in the workhouse, and generally made of wrought iron, the quality of which varies from 4d. to 6d. a piece. It is therefore evident that a workman who could earn sixpence a day would be unprofitably employed, as regards the master, if he were paid at that rate for the work of shaving and fitting up the pins, which could be done as well by another person for smaller wages. Hence arises the necessity of dividing the operations in all manufactories among persons of different capacities, and of employing in the stents below the law of proportion. For pin-making then the number of persons employed should be ten, or any number that can be divided by ten without a remainder.

Ten persons can produce a pound, or about 5500 pins of medium size, in rather less than eight hours, each person taking up the work as soon as the operation preceding that by which he or she has to perform is completed, and each being employed about a tenth part of the eight hours.

The amount paid for labour alone in the production of this article in this country annually cannot be much short of seventy or eighty thousand pounds, in all of which the wages paid to the workpeople consist of material, carriage, profit, &c., an enormous sum considering the apparent insignificance of the article.

Manufacture.—The first thing to be done is to reduce a quantity of brass wire to the requisite size. This, though properly speaking a preliminary operation, is generally done in the pin-factory, as the wire is received of larger diameter than necessary. It is performed in the usual manner of wire-drawing, and the wire is then made up into coils of six, seven, or eight, which may be attached to the surface is got rid of by first soaking the coils in a diluted solution of sulphuric acid and water, and then beating them on stones. The next process is to straighten the wire, which is performed in the following manner:—Two short lines, parallel to and very close to each other, are drawn at one end of a board or table, and seven or nine pins are driven into the wood, at a short distance apart, alternately in the two lines. The end of the wire is placed between these two rows of pins and is thus held in a zig-zag position: it is then drawn between the pins to the other end of the table, and a length of about two feet is done by laying the binding wire in time to it, so that the wire is straightened and cut into similar pieces. A number of these lengths are then taken together, and by means of a powerful pair of shears, worked by the foot, they are cut up into shorter pieces, each about two feet in length; these shorter pieces are then pointed at each end, in the following manner—

The person so employed sits in front of a small machine, which has two steel wheels or mills turning rapidly. These wheels are usually about six inches in diameter, and their rims or cutting surfaces are about three inches broad. These pins cut somewhat after the manner of a file, one course for the rough formation of the head, and another finer, for finishing them. Several of these pieces are taken in the hand, and by a dexterous movement of the thumb and fore-finger, one at a time, are continually presenting a different face to the mill, against which they are ground, and thence automatically finished by being applied in the same manner to the fine mill. After both ends of the pieces have been rounded, one pin's length is cut off from each end, when they are repaired by being fastened on to a stem, alternately into six pointed pieces. The stems of the pins are then complete. The next step is to form the head, which is effected by a piece of wire called the mould, the same size that is used for the stem, being attached to a small axletree.

At the end of the axis nearest the axis is a hole, in which is placed the end of a smaller wire, which is to form the heading. While the mould wire is turned round by one hand, the head wire is guided by the other, until it is wound in a spiral coil along the entire length of the former. It is then cut off close to the hole where it was commenced, and the coil taken off the mould. When a quantity of these coils is taken, a dozen or more of them at a time in his left hand, while with the right hand he cuts from 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 end thus caught is not cut, but as near as possible the part nearest the root, is then caught in the axis of the instrument being cut, in such a manner as to form a loop. 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 annealed by being laid on sand in a mortar or on a board; 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 fixed a steel die, containing a hollow the exact shape of half a head. The dies are of different sizes and are so cut that the head, when fixed, is of the correct shape and size. The die is then placed upon the stake, and the head fixed by passing 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, fitting the head 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 tredle, brings down the upper one or four 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 is only remains left for them to be cut off, and polished, and then boiled in a pickle, either a solution of sulphuric acid or tartar, to remove any dirt or grease, and also to produce a slight roughness upon their surfaces, which facilitates the admission of the brass they are to be united with. After this 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 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 bran flies off and leaves the pins perfectly dry and clean.

Pinning the pins is the next 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 producing a pound of pins. When the pins are separated 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 picking them up into necessary lengths, between the teeth of which they are caught by the hand; 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 placed upon them. Any loose 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 the paper is then drawn down over the pins.

Of these operations, drawing the wire, cutting it into

Vol. XVIII.—Y
lengths, cutting the heads from the coils, and timing, are performed by men, and the rest by the women and children. The fixing on the heads of the pins expeditiously and firmly has always been a matter of considerable difficulty, and it has been a cause of complaint. The head of each pin is now fixed on the machine, and the machine is in operation at the same time.

Among the machines may be mentioned that of Mr. Rundey, for which a patent was taken out in the year 1689. This machine is still in operation, and much improved, but more suitable for the manufacture of brass wire, and for forming the wire into a hollow die. A large proportion of the pins used in the manufacture of brass wire is made in this way, and are much superior to those made in the old fashion. One objection has, however, been raised against it, that it is a very laborious and expensive process. It is well known that by this process the head in manner by pressure, the wire requires to be very soft, and consequently the pins will easily bend. This certainly is a great disadvantage. We have seen some pins of which the heads were formed by curling the end of the stem round upon itself and then shaped by being struck in a die; these would be open to the objection just mentioned. The only method that occurs to us of remedying this fault is partly to produce the head by an operation similar to that of the pin being formed by winding 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 have not, however, seen this process, and it has not 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, for which a patent was granted him in May 1749.

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 as many levers or sliders 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-rite of the requisite size is placed upon a reel and spindle, and the end is drawn through a slot of zigzag pins as before described for straightening the wire, and placed between the teeth of a strong pair of pincers. This is that which is necessary to be done before setting the machine in motion.

The first slide then moving forward shuts the pincers upon the wire and instantly carries it forward into a nipping-gauge which is of a different form; it 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 lever to a carrier of the other operating slide. These carriers are 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 on 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 pincers, the under being kept up to the other by a spring. The juncture of these chaps is exactly opposite to the pin, which is forced between the chaps 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 mandrel, which by a motion of the lever leaves the pin; 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 of finger then presses the end of the wire upon the point of the mandril instantly the mandril 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 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 in the die, partially forms 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 simultaneously, and occupy the same time for 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 reader is referred to the Journal of the Society for the Improvement of Arts and Sciences, where he will find a full description of the above machine, illustrated by numerous engravings.

Mounting pins may be made of brass, in the manner above described, varnishing 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 goods, or for her person, or for her private expenditure, are 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 purposes 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 debts; but provision for pin-money is not so liable, 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 married, and it is curious to note how the law has dealt with them. It seems to be the general rule that the wife 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 waved her claim to pin-money; but she may by evidence rebut such presumption. If it is expressed in the settlement that the pin-money is 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, and the wife shall live and sport out of her husband, either in a state of adultery or not, she does not thereby forfeit her right to pin-money, and she may recover it.

PINDAR [Pindar]. [This lost lyric is restored.]

PINCIA/NO. [Num.] PINDAR, son of Daiphantus (or, as others say, of Psagoras, or Scopelium) and Cidices, was born at Cynoscephalae, the city of Elusus, in the 20th year of the era of 518, according to Clinton (Fasti Hellen., iii. p. 609), or in Ol. 64, 3 (a.c. 592), according to Bickell (Pindar, tom. iii., p. 14), and died, according to the former computation, in a.c. 439, according to the latter in a.c. 424, having completed his eightieth year. He was born at the time of the Pythian games (about the beginning of July: Arnold, Thucy. ii., p. 415), and it is spoken of him by Anaxarchus, who appears to have been the first to that branch of poetry which was particularly adapted to a flute accompaniment, and his first instructor was Lasus of Hermione, a celebrated dithyrambic poet, whose favorite instrument was the flute. (Plutarch, De orat. del. w., c. 7; Porphyry, Prob. deAE., c. 5.) Forthe use of Pindar's family were hereditary flute-players; their profession was of great reputation at Thbes, though flute-players did not come much into fashion at Athens till after the Persian wars. Pindar himself is said to have taken his first lessons at Thbes, where his father began to teach him the flute, and finding that his capacity was of a higher order, placed him under Lasus, who initiated him into lyric poetry. It is clear however from what we know of him that he could not have had much to do with the formation of Pindar's style as a lyric poet. It is more probable that Pindar, as in
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 choral-odes, like Pindar himself. Plutarch tells us (De Gior. 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 was a youth, and in the playing-grounds, the young poet 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 (τὴν χεῖρα ὑμῖν αὐτοῖς ἀλλὰ μὲν τὴν ἔρημον καθαρίσας, καὶ δύνασθαι τὸ λόγον ἐν ὀλίγῳ) πάντα.'

From which we may infer that Pindar was not regarded by the antients as pre-eminent or exclusively a composer of Epincianic odes. On the contrary, it is likely that Pindar was as much esteemed as those meritorious indeed, but obscure, poets, and from his education under Lasos, and his honorary profession of a flutist-ode, it is not improbable that the didyramb, 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 extant odes (with the one exception just mentioned, of an ode composed for the installation of a Prytanis 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 respect, at the same time that we admire the 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 Epincian ode is often a song to the celebration of a victory gained in the public 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 feast, a mixture very common among the Greeks, whose sacrifices to the gods were often only a constituent part of the banquet. The victor was often in procession to the altar of the god of the games, as at Olympia, in the time of the composition of the contest, accompanied by a comus, which sang the ἀσχολίαι of Archilochus, or an ode composed for the occasion by some other poet; or he celebrated his victory on his return to his native city, by a processional song, a hymn, a dance, a banquet, and a comus. The poet praised both the victor himself, and his native city the victor was praised either for his wealth (Οἰκονομίας, as in the case of the horse-race, where it was only the wealth of those who could afford for the prize as Pindar himself says; or for his valor (ἀθάνατος), if he had been exposed to any danger in the contest. The city of the victor is generally praised with some reference to the mythic legends of its history. The Epic was always formed the chief part of Pindar's ode, and it is allowed to run into every sort of digression, howeverら not at random, but with some fixed purpose, which we have generally a difficulty in determining. Although the Epincian 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 injuries of his enemies; to criticise and deprecate rival poets, such as Simonides and Bacchylides; and sometimes even to address the person whom he employed as his ὑπαρχόντας when his own absence prevented him from teaching the chorus. Thus in Olimpiade, ὑπαρχόντας, he tells his disciples that a constant evasion of the old calumny, 'Βαστάσκετε τινε' for you are a correct messenger, the enfakele of the fair-haired muse, a swift mixing-cup of loudly-uttered misrule.' He often makes boastful comparisons between himself and other poets, as when he says (Ol. ii. 63):—'I have many swift arrows within my quiver; they have a voice for the wise; but for the common herd they need an interpreter: wise is he who has learned much by his natural abilities; but those two (Simonides and Bacchylides), whose expertise comes from practice only, bumbling in their garrulity like a brace of jack-daws, clamour in vain against the god-like bird of prophecy. The poet's name is sung in the chorus, and in the praise of his works; his works are sung in the chorus, and the praise of his name. And the poet, the lay poet, is the embodiment of epic poetry, its picturesque conceptions. He has great skill and power in description, and his style abounds in the most racy and vivid metaphors. From the festal nature of most of his odes, we find in them a frequent allusion to the amours which are repugnant to the spirit of modern lyric poetry, and which therefore offend the modern reader, who comes to the perusal of Pindar with vague expectations of that continued flow of sublime imagery and dignity from which are generally regarded as essential to the lyrical poem. It should never be forgotten, though the occasions for which Pindar wrote required much of solemnity and religious gravity, they admitted, as Homer showed, the same turn of thought in a joyful event which might suggest.
the loud-voicing flute as much as to the tranquil melodies of the harp; and the rhythms were Ἀροιος, or Lydian, as often as Doric.

The best edition of Pindar is that by August Böckh, Lipsim, 1811, 1821, 3 vols. 4to. The sound criticism which Böckh has applied to the text of the author, and his comprehensive and masterly explanations, have thrown an entirely new light upon the music, metres, lyre poetry, &c. of the Greeks. Ludolf Dissen, who wrote a Latin translation and explanations of Böckh's edition, subsequently (1830) published a smaller edition, which may be considered as an abridgment of Böckh's. As an explanatory edition it is a very good one; but as the fragments are not perfect, and cannot be complete for its predecessor. There is a very good translation of Pindar into English verse by the Rev. H. F. Cary (London, 1833), which would have been still better if the translator had taken Böckh 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 1755, was a younger son of a patrician family of Verona. His elder brother, Giovanni Pindemonte, wrote some tragedies, and was an amateur, which is much esteemed at the 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. In 1790, he returned to his native country, with affectionate remembrance. Being made a knight of the order of St. John, he went to Malta, where he resided some time, as well as in Sicily. When he was about thirty years of age, a serious illness, which showed the constitutional weakness of his frame, induced him to give up busy life and retire to the country. He fixed his residence at Avesa near Verona, where he wrote his Prosse o Poesie Campeserti, published first in 1788, and often reprinted since. This poem is the best of his contemplated works, in which as him, it is warm-hearted and liberal. His poetry is beautifully harmonious and flowing. In his next production, "Epistole in Verdi," he alludes to the revolution war then raging in Italy, and in false efforts upon for his guide instead of Heyne.

PINDUS. [GREEK.] PINE-APPLE, the fruit of the Ananassa sativa, Lindl., a tropical plant, indigenous to South America and some of the West India Islands. The plant is propagated by seeds, and has been 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 Burma, they found this kind of pine-apple, which resembles the pine-apple in form and size, and has a variety of the same. The fruit is round and firm, and has a hard, thick skin, and is very sweet. The first pine-apple by Rose, the gardener, but there are 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 at the time of the great age of gardening, 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 void of any considerable success. In the present day, the pine-apple is cultivated in a more advantageous manner, and is now cultivated of a species of pine-apple.
PIN

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 Bory (Gardener's Magazine, iii. 442), "the pine-apple in its wild state is found near the sea-shore, the sand accumulated there in downs serving for its growth, as well as for that of most of the species of the same family. The place where the best pineapples are cultivated must be near the sandy 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 in such places varies but little throughout the year; for instance, the mean temperature of the warmest month at Cumana, 10° 27' N. lat., is, according to Humboldt, 84° 38', and that of the coldest 72° 16'. At Havana, on the skirts of the tropics, the mean 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 of 70°, and a maximum not higher than 90°. When, from the shortness of our days in winter, there is a deficiency of light, and when forcing the plant in its absence would produce only imperfectly formed tissues, 70° will be proper. In summer 80° is the maximum, much heat exceeding that from 90° 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 that of the natural earth. With the exception of the winter, when 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 greater temperature of the earth's crust, at the bottom of which the temperature is usually about 60°; while the surface is about 70°. The difference in temperature at the equator is not sufficient to be appreciable; 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 soil, 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 reduce the utility 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 of 70°, and a maximum not higher than 90°. When, from the shortness of our days in winter, there is a deficiency of light, and when forcing the plant in its absence would produce only imperfectly formed tissues, 70° will be proper. In summer 80° is the maximum, much heat exceeding that from 90° 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 that of the natural earth. With the exception of the winter, when 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 greater temperature of the earth's crust, at the bottom of which the temperature is usually about 60°; while the surface is about 70°. The difference in temperature at the equator is not sufficient to be appreciable; 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 soil, 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 reduce the utility with the above, and also from the results of experience, it may be stated that the artificial temperature of the atmosphere in which the pineapple is intended to be grown should have a mean of about 80°; or a minimum of 70°, and a maximum not higher than 90°. When, from the shortness of our days in winter, there is a deficiency of light, and when forcing the plant in its absence would produce only imperfectly formed tissues, 70° will be proper. In summer 80° is the maximum, much heat exceeding that from 90° will not be too much. The maximum by sun-heat may extend higher, but 100° should be its limit.

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, which might be accomplished by keeping the pots almost to close the holes in the bottom of the pots by their excretions; or a stoppage may occur in consequence of the excretions of the soil on the tap when it wastes and becomes empty; and being rendered compact. Further advantage may be effectually be exercised by simply plunging an empty pot, with a mouth down wards, and on this placing the bottom of that containing the plant, closing the tap round the sides of the latter in the usual manner. A good precaution against the latter may be partially removed from the sides of the pot.

Moisture is essential for the growth of the pineapple. The condition of the soil in the pots will of course indicate whether there is no discrimination made with the sand in which the plant is cultivated, or whether the atmosphere should be kept moist by syringing, 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, a moisture of 70° should be adopted; and in damp cloudy weather in winter, when it is an object to retard rather than promote growth, they should be kept rather dry than otherwise. Moisture will prove injurious when it is accompanied by sufficiently high temperature and a due share of light. The most moderate periods 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 be a proper practice and has often been successfully practiced, 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 vicissitudes 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 that above pointed out as being natural to them. They will apparently do so; but although the plants may continue to grow very well under these circumstances, experience proves that their vital energy is interfered with, and that a degradation of nature diminished, as is continually indicated by the fruit-smell being sent up with only a few imperfect pipes. The stagnation of water about the roots from defect of drainage, or from too much heat and dryness, or from 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 cultivators. With regard to the last, it was hoped that it was to be brought to the time of gathering to be in the sap, and to augment the amount of secretions by gradually withholding moisture and increasing the temperature of the earth's crust, or to leave a little more air than usual; 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 extent that cultivation under glass affords of progressively inspiriting the juices towards the period of ripening, may be ascribed the superior fruit of the those produced in countries where the plants are indigenous, as was alluded to under Ananas Inavis.

The varieties of the pine-apple are numerous; the best however have been already enumerated; and full descriptions of upwards of fifty varieties may be referred to in the Trans. Hort. Inst. London, 5th series, vol. 1.; and of all the principal varieties in the Guide to the Orchard and Kitchen-Garden.

PINE TREE. [PINUS.] PINEAL GLAND. [BRAIN.] PINE'DA, 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 obnoxious to the Roman Catholic religion. The result of his inquiry was an 'Index novus Librorum Prohibitorum,' Seville, 1631, published by order of Cardinal Zaptas, grand-inquisitor of Spain. Pineda published a verbatim of Theodosii Phalaris, 1°. De Coelo et Mundo, 4°. Maor. Historia Ecclesiastica, o Historia Universal de los Santos Apostoles, do desde su Creacion hasta estos Tiempos, 5 vols. fol., Barcelo, 1620. This work is a universal history of the world in 30 books, and is written with some display of erudition but without the slightest indication of that inherent spirit or an inquisitor. It seems that the Spaniards had no universal history in their language, and Pineda undertook to supply the deficiency.

PINEROLI, [PINEROLI] PINGRE, ALEXANDER WILLIAM, was born at
Primary form a rhomboid, but generally found in hexagonal prisms. Cleavage parallel to the lateral faces of the prism. Fracture indistinct, uneven. Hardness, scratches gypsum, is scratched by flour spar. Colour reddish, greyish, and greyish-red. Luster slightly resinous. Opaque. Specific gravity 2.78 to 2.98.

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 derives from the Greek 'πέρνητα', meaning 'to pass'.

It is found in Saxony, France, England, in some other parts of Europe, and in North America.

According to Gmelin, the pinte of St. Pardoux in France consists of silica and alumina, 22.480; potash, 7.944; soda, 0.386; percent of iron, 5.512; magnesia with manganese, 3.760; water with animal matter, 1410: total, 100.466.

PINK. [CARMATION.]

PINKERTON, JOHN, was born at Edinburgh in 1758, 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 that or any other profession. He commenced business in 1776, by the publication of an elegy entitled 'Cragimillar Castle'; and on the death of his father in 1780 he came to London, and settling there gave himself up to a literary life.

In 1783 he published 'Two Dithyrambic Odes on Enthusiasm and Laughter,' in a sixpenny quarto pamphlet, and soon after another original volume of the same form, entitled 'Teles Philes' or Verses on War, that he produced at the same time. To these he added, in 1785, 2 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 gave 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 authors were attempted to be made still more startling by a new and very strange system of spelling, in which however the inventor had the good sense not to persevere after it had answered its temporary purpuse.

In 1785 he published 'An Antient Halla, however a considerable number were fabrications of Pinkerton's own. Meanwhile in 1782 he had published 'Two Dithyrambic Odes on Enthusiasm and Laughter,' in a sixpenny quarto pamphlet, and soon after another original volume of the same form, entitled 'Teles Philes' or Verses on War, that he produced at the same time. To these he added, in 1785, 2 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 gave 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 authors were attempted to be made still more startling by a new and very strange system of spelling, in which however the inventor had the good sense not to persevere after it had answered its temporary purpuse.

In 1785 he published 'An Antient Halla, however a considerable number were fabrications of Pinkerton's own. Meanwhile in 1782 he had published 'Two Dithyrambic Odes on Enthusiasm and Laughter,' in a sixpenny quarto pamphlet, and soon after another original volume of the same form, entitled 'Teles Philes' or Verses on War, that he produced at the same time. To these he added, in 1785, 2 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 gave 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 authors were attempted to be made still more startling by a new and very strange system of spelling, in which however the inventor had the good sense not to persevere after it had answered its temporary purpuse.

In 1785 he published 'An Antient Halla, however a considerable number were fabrications of Pinkerton's own. Meanwhile in 1782 he had published 'Two Dithyrambic Odes on Enthusiasm and Laughter,' in a sixpenny quarto pamphlet, and soon after another original volume of the same form, entitled 'Teles Philes' or Verses on War, that he produced at the same time. To these he added, in 1785, 2 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 gave 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 authors were attempted to be made still more startling by a new and very strange system of spelling, in which however the inventor had the good sense not to persevere after it had answered its temporary purpuse.
for all who dissented from his views, and  
above all his shal-  
low and petulant attacks upon the common creed in reli-  
gion and moral discipline. He raised  
most acute and unanswerable  
judgment 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 1843, the contents of which however are  
not of much interest.

PINNA MARINA. [MYTILUS, vol. xvi, p. 50]  
PINNOOTHERANS. [PINNOOTHERANS.  
PINNOOTHERANS is a tribe of the third family of  
the Brachyurus Crustacea (Camelidae), according to the  
arrangement of M. Milne Edwards.

The Pinnootherans are small crustaceans whose carapace  
is nearly circular, and whose teguments exhibit consider- 
able softness. Their eyes are in general small, and the  
disposition of their front and their antennae varies, as also  
their external jaw-feet, which present remarkable anoma-  
lies. 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  
external plastron.

But it is the singular habits of these crustaceans which  
especially demand attention; for they ordinarily are housed by the mantle-lives of certain conchifera—Mytilus,  
Pinna, Macoma, &c., for example.

M. Milne Edwards arranges in this small group the genera  
Pinnoothera, Pinna, Hymenocora, and Ela-  
mena; but he acknowledges that this tribe is not natural  
as might be desired, and that hereafter perhaps the neces-  
ity for subdividing it may arise.

Pinnootherans. (Laterellae.)  

Generic Characteris—Body circular and rounded above;  
front not soldered to the epaule; eyes very small, orbit  
neatly circular; internal antennae of the ordinary form,  
and the fossets which lodge them scarcely separated from each  
other; external antennae short, occupying the internal an-  
tennae of the orbit. Buccal frame very wide backward, and  
describing a semicircle forwards. External jaw-feet placed  
very obliquely; their enlarged and valvular portion is formed  
either 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 didactylos claws. The internal plastron is very wide,  
and, in the male, the apertures of the organs of generation  
occur its last segment. The feet are moderate. The  
abdomen of the male is small, whilst that of the female  
is very nearly convex, and much larger than the external  
plastron. (Milne-Edwards.)

The view of the under side of the upper part of Pinnootherans, eyes, jaw-feet, &c  
are 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 Pea Crab' (Entom. Mag., No. xi.), whence it  
appears that Pinnoothera, in the early 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 natatory feet; in short that it then bears  
greatest resemblance to Zoas.

These curious facts are also known to the antients, who  
were not ignorant of their connexion with the Piume. The  
Greeks named them Pinnoothera (Pinnootheres) and Pinno-  
phylax (Pinnoephyline). (Arrist, Hist. Anim., v, xx.)  
Opian (Hae-  
levus, i, line 186, et seq.) treats the connexion as a sort of  
derivative from the Pinnoothera of M. Milne Edwards. (Nat.  
Hist., xi, xxxi.) described as harbouring in the empty  
shells of oysters, and as migrating to others when it  
increased in growth, appears to have been more applicable to  
the Piume of the moderns; but the same author, in the  
fourty-second chapter of the same book, 'De Pinna, et Pin-  
notere, et aquatilium sensu,' uses the terms Pinnootheres  
and Pinnoephyline to designate the crab which resides in the  
shell of the Pinna.
Among the moderns Hasselquist 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 Lent. I believe no people make such 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 replaced by Linnaeus under the class of insects), when with us oysters only are eaten.

Amongst others they sell here a Sepia (Cuttle-fish), which by them is called Șerpeșcul; it has only eight tentacles, all of equal length. The whole animal is a foot long, and thick in the middle. In this the Greeks have related to me an anecdote, which I think remarkable. The Pinna mutilata, or great Silk muscle, is here found in the bottom of the sea in large quantities, being a foot long. The Șerpeșcul, 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 șepeș (for so the Greeks call the shell) shuts up her house, and the capacious 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 council, Mr. Justi, a curious and ingenious man, who has travelled much, and 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, inasmuch 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 Pinnothae Pismum, the Pea-crab, and Pinnothae veterum, Pinnothae of the antients.

Description of Pinnothae Pismum

Carapace soft; first 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 cilated. Abdomen of the female circular; that of the male being oval, the penultimate. Length: female, 4 lines; male, 2 lines.

Locality.—Very common in Mytilus edulis on the coasts of England and France. [Lesch. Malac. Brit., t. 1, f. 9, 3 (female); F. carrion of the same work, t. 14, f. 10 and 11 (male); F. Later-ii of the same work, t. 1, f. 7 and 8 (young female).] (M. Edwards.)

M. Milne Edwards is of opinion that Pinnothae Cranich, Lesch (Malac., t. 14, f. 4, 9), does not differ specifically from Pinnothae.

Description of Pinnothae veterum.

General form the same as in the preceding species. A small spine on the lower border of the right manus in the female. The abdomen of the female is oval; but this peculiarity may disappear with age. Length of the female, 8 lines.

Locality.—Found in Pinna on the coasts of Italy, Scg.

Pinnothae veterum.

Elamena. (M. Edwards.)

Founded on Hymenosoma Motieri, figured by M. Rüppell, in his work on the 'Crustacea 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 Carapace, and the Cyprinocem.

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 ordinary cavities; they are free under the front and are applied backwards against a small projection of the pterygostomian region. The internal 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 movable joint and bent back longitudinally, and extended, 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 tips of the eyes. The buccal frame, instead of being distinctly, as in the Hymenosoma, very large and circular, 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 sternal plastron is much wider than it is long. The feet are all slender, filiform, and long; those of the first pair are terminated by pinchers, 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 is of opinion 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 not apprised of the character of the male immitient organs, he has preferred leaving it under the name of the Hymenosoma, of which it has hitherto formed a part.

Example, Elamena Mathes (Rüppell, Krabben, pl. v.)

Description.—Carapace smooth, very wide 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 which, if cut off at the sides, would form a 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. (Lesch.)

Generic Character.—Carapace very much flattened above, and nearly circular; the front very narrow and inclined. Orbits very small, and nearly circular, and the eyes must be bent back downwards rather than outwards, to be hidden in them. The antennary fossites are longitudinal, and continued without interruption with the orbits; the stem of the internal antennae is large. The external antennae are separated 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 or rectangular; its spines or borders are very developed at the external angle of the orbits. 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 sternal plastron is circular. The anterior feet are moderate, and the third pair are the longest; the tarsi are slender and styloform. The abdomen of the male is very small, only reaching to the level of the third pair of 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 Carapace, 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 sternal plastron, and the apertures of the excretory apparatus are formed in that buckler, instead of being as ordinarily, on the basilar joint of the posterior feet.

Example, Hymenosoma orbicularis.

Description.—Carapace marked above with a large circular and smooth impression, a slightly granular for 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 orbital angle. Length one inch.}

Locality.—The Cape of Good Hope.
Doto. (M. Edwards.)

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 Mysteries. It approximates to the Ocytopodes 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 Catametopids 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-foot 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 Ocytopodes, 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 Ocytopodes and the Pinuothertae.

Example, Doto sulcatus (Cancer sulcatus, Forsk.; Mysteries 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.

---

M. Milne Edwards is of opinion that these singular crustaceans establish, in some respects, the passage between the Ocytopodes, Pinnotheres, and even certain Macura, such as Callianassa. [Callianassa.]

Example, Mysteries longicornis.

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.

---

Doto sulcatus (enlarged).

a, profile view still more enlarged, without the legs, to show the grooves; 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 1518. He entered the service of a Portuguese gentleman, in which he continued eighteen months. An adventure, by which he had well nigh lost his life, but which he does not disclose, obliged him to emi-
grate, and he sailed in a vessel bound for the East Indies. Searcely 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 King. Captain was he of 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, assigned him a window in their chapel to be filled with sea, rare carvings of the Master 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 Lugor by a Chinese pirate, who boarded and plundered his vessel, Pinto, though wounded, succeeded in making his escape, and arrived at Pattan, 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 10th of May, 1540. The Chinese pirate was overtaken, his vessel captured and plundered by him, and Pinto's life seems to have been one of constant vicissitudes. He was one day the master of countless treasures, on the next groaning in captivity. In the intervals he was employed in the service of Japan, and in other important official actions, 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 found in the first collection of their letters, published in Italian, at Venice, in 1655, 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 della Vida del Padre Francisco Xavier, Lond., 1823), admits that most of his information comes 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 (26th 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 in which he describes, it is also an 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. His narrative of the mission of St. Francis Xavier, to the Emperor of Caleuch, which he tells us he had seen in the island of Sumatra, "he saw the tombs of the emperors of China," and his 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, in 1614, in two volumes, under the title of Peregrinacion de Fernan Mendez Pinto, &c. Six years after they were translated into Spanish by Francisco de Herrera, who added a profuse 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 vols. 8vo.), and into English by H. Cogan (Lond., 1663, and 1693, ii. 163). There are also editions of the original Portuguese work (Lisb., 1678, 1711, 1720, and 1762), with the 'Itinerario de Antonio Tenere.' (Nicolas Antonio, Bib. Nov. vol. ii. p. 380; Cardozo, Agiographia Lusitana. Lib. 1627.)

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 of the most singular. His 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 for the cities of his native town, and for his manner singular; he not only finished his paintings very highly, but endeavoured to give them unusual splendour, by introducing rich giltting blended with architectural ornaments, painted as to resemble high relief, a style wholly incompatible 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 history of Guiseppe Pinto is brief, and is related in a letter of his to the monks of 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, assigned him a window in their chapel to be filled with sea, rare carvings of the Master 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 Lugor by a Chinese pirate, who boarded and plundered his vessel, Pinto, though wounded, succeeded in making his escape, and arrived at Pattan, on the gulf of Siam.

PINUS, a genus of Gymnospermous evergreens, 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 fir by their leaves, always evergreen, and needle-shaped, growing in clusters from the branches, and having a membranous sheath at their base. In reality each parcel of leaves indicates a small branch auxiliary to a membranous, deciduous, withering leaf. The species are generally of great beauty, and are of great importance in commerce, as is shown by the large sales of timber which are annually made in Liverpool for the China market, and in London's 'Arboretum Britannicum;' of those of the Pine of Haugeau, a village on the Rhine, is said to be the most important.

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 varieties are known, and in Loudon's 'Arboretum Britannicum.' of those of the Pine of Haugeau, 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 (Pinus uncinata). Trunk erect. Leaves 2, short, dark green. Cones ovate, recurved, sessile, with pyramidal, flat, and depressed, or recurved, truncated, or acorn-like scales. 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 hardiness and the great durability of its timber. The P. Mughtar 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 ovate, sessile, with pendulous, with ruged, rounded, truncated scales. A red-barked tree of large size from the northern parts of North America. The wood is fine-grained and of a close texture, and is highly esteemed in Canada for strength and durability. In appearance the species bear some resemblance to P. Laricio.

5. The Alitro Pine (Pinus halepensis). Trunk slender, erect. Leaves 2, long, slender, light green. Cones ovate, stalked, subulate, 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 imperfections.

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 hardy, and adapted for planting in the warmer parts of the United States. It is a native of the south of Europe, and is 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, curved, and knobby-topped. Leaves 2, divaricating, 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 Pyreneesica). 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, and other limits of the Alpujarras, and elsewhere. Its timber 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 peasants Pin Naufragado, meaning shipwrecked, from its resemblance to the vessels of the same name.

9. The Patlas Pine (Pinus Patllasiana). Trunk erect, with horizontal branches when old. Leaves 2, dark green, very long, and stiff. Cones curved, horizontal, ovate oblong, as long as the leaves, with roundish truncate scales. A fine tree from the central parts of the Crimes, with the habits 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 palate.

10. The Stone Pine (Pinus Pinaster). 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 roundish 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 oily, are eaten. On the latter account it has accompanied Europeans in their migrations, and has now become 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 trunk is said to be white 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 peculiar 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 Laricio). Trunk very erect and tall. Leaves in pairs, long, deep green, distant, rather thin, with white glands, but without any knees, with roundish rugged 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.

** Scales 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, introduced to many parts of the United States, 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 'Arboretum Britannicum,' p. 2219. Many species of Cones are named after the trees which they occur in, with hardy and roundish 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 middle and eastern parts of North America, as far north as Connecticut and Massachusetts. It is a species very of great value for domestic and naval architecture, provided the sapwood, which is very perishable, is first removed. It is regarded as most durable timber in this country. In California it is said to have a good market on account of its quality. It is one of the Southern Pines. P. variabilis is one of its garden names.

16. The Jersey Pine (Pinus inopina). A low gnarled tree. Leaves 2, dark green, from two to three inches long. Cones recurved, ovate-oblong, straight, short, with 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 unsuitable to our climate. It is also called the Banks Pine; it is called Scrub Pine in the United States.

b. Leaves in threes.

17. The Chinese Pine (Pinus sinensis). A large tree. Leaves 3, slender, deep green, serrulated. Cones ovate, brownish, on short stalks, with flattened truncate unarced scales. Native of China. Very little is known of it, except from Chinese draughts. The garden of Mr. Wells, of Redleaf, near Tunbridge, where it is found to be 'tolerably hardy.' This seems to be the pine found on the Kosha Hills of India, and regarded as a variety of Pinaster by Prof. Balfour.

18. The Noble Pine (Pinus insignis). Leaves 3, grass-green, a little wavy, irregularly arranged, longer than the cones. Cones ovate, bright brown, obtuse, with rounded depressed obtuse scales, the lowermost of which are longer than the others, and more or less hooked back. A beautiful species, native of California, remarkable for its bright dense grass-green foliage. Nothing is known of its native habit. It is rather too tender for the latitude of London.

19. The Canary Pine (Pinus canariensis). Trunk stout, erect. Leaves 3, very long, rough-edged, wavy, grass-green. Cones oblong, woody, five or six inches long, with prominent large pyramidal straight scales, terminated by a hard blunt callus. A native of the mountains of Teneriffe and Canary, where it flowers late in the year, and often acquires an enormous size. The timber is said to be very resinous and durable. The species is too tender for England.

20. The Ocoee Pine (Pinus Ocoee or Tocoee). Leaves 3, wavy, rough, light green. Cones ovate, smooth, with pyramidal angular blunt scales. A Mexican plant, of which little is known. It is found on M. Oriaza, and near Real del Monte, and forms a tree 100 feet in height.

** Scales of Cones spiny at the apex.

21. The spreading-leaved Pine (Pinus patula). Leaves 3, very slender, spreading. Cones ovate, oblong, polished, with small angular truncated prominent scales. Native of Mexico. A lofty tree, with leaves eight or nine inches long. It occurs in the mountains of Mexico and Central America.

22. The southern Pine (P. australis or P. palustris). Trunk erect, very cylindrical, and stiff. Leaves 3, very long,
the dry bleak face of the Tartarian side of those mountains. It is represented to be a large tree, conical in form and with branches not much forked. It bears from 10 to 15 inches long. The Chilgohza Pine is thought to be the same thing.

c. Leaves in fives.

**Scales of Cones**

31. The Eastern, or American (Pinus Strobus). Leaves 5, slender, from 8 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 60 feet high.

32. The Short-leaved Pine (Pinus leucodermis). Leaves 5, very slender, 3 or 4 inches long, rough-edged, light green. Cones ovate, 12 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, bright brown, about as long as the leaves, with elevated, rough, truncate scales. A native of the mountains of Mexico to the height of 11,000 feet above the sea.

34. The Thread-leaved Pine (Pinus filifolia). Leaves 4, to 12 inches long, acute, angularly conic. Cones sessile, ovate-acuminate, woody, hard, curved, 9 inches long, 3 inches in diameter at the base, with lozenge-shaped pyramidal, depressed scales, and a hard woody compressed conical mass in the middle. A noble pine, found in the desert temiales by Mr. Hartweg. Nothing is yet known of its habits or timber.

35. The Acapulco Pine (Pinus Acapulcensis). Leaves 5, thin, short, very glaucous, as well as the shoots. Cones pendulous, ovate, obtuse, without scales, 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 near Acapulco, growing to 50 feet high.

36. The False 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 acute scales. A Mexican pine, with acut habit, but with pyramids of the Weymouth pine, found very commonly at Angangueo, about 8000 feet above the sea.

37. The Bedford Pine (Pinus Russellii). 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 obtuse scales. Native of Mexico near Real del Monte and Regla. The young branches are nearly an inch in diameter.

38. The Devonshire Pine (Pinus Devoniana). 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 1 1/2 inches, with rounded, obtuse, poliished scales. 12 inches long. Cones 3 to 5 inches in diameter, clustering with branches to 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 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, 12 to 15 feet in diameter, clustering with branches to 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.

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, woody, and rough, with long truncate, obtuse, mucronate, corky, recurved scales. Seeds 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.


**Scales of Cones**

40. The West Indian Pine (Pinus occidentalis). Leaves 5, pale green, slender, much longer than the cones. Cones ovate-oblong, obtuse, stalked, with rounded, angular, prominent scales, tipped by a sharp prickle. A native of St. Domingo, on the mountains where snow occasionally falls.

41. The long-leaved Pine (Pinus macrophylla). 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.
Cones small, roundish-ovate, hard, with elevated roundish obtuse scales. Seeds large, ebatle. A small Mexican tree, occurring in large forests, and producing seeds similar to those of the Stone and Neouza pines.

45. The Weeping Willow (Salix babylonica). Tree erect, conical. Leaves 5, with no sheath, short, stiff, glaucous green. Cones ascending, oblong, about the length of the leaves, with thin callos-pointed scales. Seeds large, without a sheath. A native of China, S. America, and others of the northern districts in North America. It grows very fast, and produces the clean, soft, white, but perishable timber imported from America under the name of 'Pine.' Of this species, P. monticola of Douglas, seems a mere variety.

46. The Lowly 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 10 to 20 inches long, with very thin rounded scales. A native of India, in sandy plains where no other vegetation exists. Cones are found 60 feet high and more. The wood is spongy, and of no value except for firewood. The seeds are collected by the Indians. It is a giant tree, resembling the Weeping pine in habit: found in Oregon and California, and in Arkansas.

47. The Ayacucho Pine (Pinus Ayacucho). Leaves 5, with deciduous sheaths, slender, very glaucous on one side, marked, from 2 to 4 inches long. Cones dropping, 2 feet long, very slender, with distant, oblong-lanceolate, obtuse, spreading scales. A gigantic tree resembling the Weeping pine in habit: found in the Andes, and in Peru.

Besides the foregoing, the following species of Pine are mentioned in books, but they are too imperfectly known to be worth further notice in this place: viz. P. californica, P. densata, P. edulis, P. durangensis, P. grandis, P. mindanae, P. oocarpa, P. omosto, P. phyllocephala, P. salicifolia, P. tasmanica, P. tuberculata, radiana, costata, squamata, tuberculata.


PINIARY. [Hutchinson, p. 219.]

PIOMI. [Stenka.]

PIOMBO, SEBASTIAN DEL, an eminent painter, both of portrait and history, was born in 1485, at Venice, whence he was called also Venetian. His surname, according to Lanzi, was Luciano, though it does not appear that he was known by it in his own time, or that he ever marked his pictures with it. On his principal performance in the sanguine color of picture, the Venetian Lucasian facies ispe, appears in characters, not doubt traced by himself. He was a skilful musician, particularly on the lute, but abandoned that science for painting, the rudiments of which he acquired under Bellini, but afterwards became the disciple of Giovanni, whose style of painting he carefully studied and successfully imitated. He first distinguished himself as a portrait painter, to which his powers were peculiarly adapted. His portraits are boldly designed and executed with great facility. In 1505, in the church of S. Stefano del Canto, in which city he was a citizen, and which is the residence of the Venetian nation, was called a divine performance, and of Pietro Aretino, in which he distinguished five different tints of black in the dress, imitating with wonderful exactness the difference of the velvet, the satin, and other materials of the drapery.

The first historical picture which established his reputation was the altar-piece in the church of S. Gio. Crisóstomo, at Venice, which from its richness and harmony of colouring has frequently been mistaken for a work by Giorgione. Sebastiano, who was the son of a rich merchant, called Andrea, a native of Chiigi, a rich merchant, who traded at Venice, by whom he was employed in ornamenting his palace of the Farnesina, in conjunction with Baldassarre Peruzzi, where Raffaello had also been employed. Thus in painting in competition, he found his own deficiency, that, not to add to to what already 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 Raffaelle, avoided the company of Sebastiano, who, as a colourist, in the hope that, assisted by his composition, Pombo might successfully rival the efforts of Urbino. Michael Angelo accordingly furnished the designs for the Pietà, in the church of the Conventual at Viterbo; and the Transfiguration and the Flagellation in S. Pietro, in Montorio, at Rome, the execution of which however, in consequence of Pombo's tedious mode of proceeding, occupied six years. The extraordinary beauty of the colouring and the grandeur of Michael Angelo's composition, and the extent in these celebrated productions, were the objects of universal surprise and applause.

At this time cardinal Giu. de' Medici commissioned Raffaello to paint the picture of the Transfiguration, and desired him to be desirous of presenting an altar-piece to the cathedral of Narbonne, of which he was archbishop, he engaged Sebastiano to paint a picture of the Raising of Lazarus, of the same dimensions as the other picture; Sebastiano 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 now on view in the church of Santa Maria de' Miracoli. Sebastiano's performance excited universal admiration.

This picture was removed, by the regent of France, from the cathedral of Narbonne into the Orleans collection, where it has been since it was purchased by the latter, 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 VII., 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 seal of the lead. This post rendered it necessary that he should assume a religious habit, he abandoned the profession of a painter, and was thereupon called Frate Bastiano del Piombo. His last work was the painting of the altar of the chapel of the Chigi family, in Santa Maria del Popolo, which he left imperfect, and it was afterwards finished by Francesco Salviati. The picture is remarkable for the fine expression of the faces of his studies, towards the end of 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 coating of white and green colour, or, according to some authorities, a plaster composed of quick-time, pitch, and mastix.

'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 beauty 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 he was obstinate and fastidious in finishing, what he began with reluctance and finished with fatigue.' (Lanzi, Storia Pittorica, iii. 66; Pihington's Dict., by Fuseli; Bryan's Dict.)

PIOZZI, MRS., was originally Miss Esther Lynch Salusbury, being the daughter of John Salusbury, Esq., of Bodvel in Carnarvonshire, where she was born in 1739. Her good looks and vivacity early acquired her some distinction in the London world of fashion, in which old lady. In 1763, to Mr. Henry Thrale, an eminent 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 having a new house at 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 Piozzi,
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 two waves will be destroyed when they pass through each other. However, to explain how the air moves in 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 its tones is quite another thing, and no explanation can take place at those extremities, 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 the extremities. We then see ([Acoustics, pp. 93, 94]) that the state of the pipe, its two extremities never being condensed or rarefied, is as if it were if two waves of sound were travelling in opposite directions, every one of them moving with a constant velocity, and the sum of the intensities of the two waves being equal. It was this principle which Pascal applied to 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 wave of condensation or rarefaction. Hence the lowest note which a pipe can 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 the air.

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 c having 258 double vibrations per second, this 1125 feet must contain 258 double waves, or each double wave must be 43 3/4 feet. The single wave then is 218 1/4 feet, or 2 feet 2 inches and 36 of an inch, which is the theoretical length of the pipe. Now the organ-pipes of the French builders are 18 feet 2 inches long to the stop, as stated by the French organ-builders ([Acoustics, p. 498]), but this is of course a rough description, since the French organ-builders also say the pipe is 2 feet (according to Boit), 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 pipe of the note c in an open pipe, the pipe being 1 foot 1 inch in a stopped pipe (the stopped diapaschon), 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 note as a pipe or organ from the embouchure (or mouth hole) to the end of the instrument is a little more than 2 feet, but certainly never 2 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 over 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, bow your second finger, you 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. We know to those who play on this instrument (to those who play in tune at least) that drawing the lips back, so as not to much confine the air contiguous to the embouchure, sharpens the tones, and if the embouchure is opened up, the instrument means continual alteration of the position 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 humming can be carried to a much greater extent with those notes than with the low notes; but so little

---

**Note:** The reference to a silhouette is an interesting point in the article.Sound in the "Enry Metrop." the distinguished author of which has himself observed that he was using in a different scene from the usual one, and (p. 780) makes the

---

**Footnote:**

1 The case of this error is an inexplicatory in the article. Sound in the "Raven" Metrop. the distinguished author of which has himself observed that he was using in a different scene from the usual one, and (p. 780) makes the...
were the practical musicians in connection with the theo-
retical in the time of Daniel Bernoulli (who first gave the ma-
ple to the public, subject), that this simple fact
was only discovered by him from a new and somewhat ap-
licated 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
manner at both ends. But this is not the case with the conical
flute or in the organ-pipe, in which the cause of condensa-
sion is supplied at the side; and in fact all experiments in
which the cause of undulation has been equally applied over
all the parts of the pipe perpendicular 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. More-
over, while an orifice is made in the side of a coni-
ical flute, it is not equivalent to the formation of a new pipe
terminating at that orifice, though the results are some-
what resembling. Any note between the fundamental note
and its octave may be obtained by an orifice of one size or
another made at or near the middle of a pipe.

We have seen that we may suppose the extremities of the
open pipe to contain between them 2, 3, &c. half-waves,
while the notes of the open pipe having half-waves in length, will
give the Harmonics of the fundamental note. This sub-
ject 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 wind enters the bore of the pipe, the larger 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 produc-
tion of the fundamental note. Thus, if the bore of this be too
small in the bore, it will yield the octave of the fundament
note; or if the latter, only with great attention to the
voicing, or adjustment of the orifice through which the wind
enters the bore of the pipe (which should be loose, or
imagine to be the case in modern instruments), the lower
notes will be difficult to obtain. And the various har-
monics 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 funda-
mental 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 re-
moved by the present state of the mathematical analysis
of this subject, that they should present circumstances dif-
ficult of explanation.

It will be obvious, from the considerations in Acous-
otics, that when the extremities of the pipe contain between them
n half-waves and the pipe is four times that length (inclusive)
at which the velocities are always greater than else-
where, and no condensations or rarefactions are always greater than elsewhere, and
which are always at rest or nearly so. These immove-
able 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
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, will vibrate at a lower note than the pipe open
at both ends, the reason why the pipes of the stopped dispa-
rected at the organ are halves of the lengths of those of the open dispa-

Again, since the double length of the pipe is an odd
number of simple waves, the harmonics which the pipe can
yield must be odd numbers of the pipe length, but one
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
must be all an odd number. At 5 feet, for instance, the pipe
must leave the pipe closed at both ends (a number of no practical
use, as its sound could not be heard to the student; the resul-
tant he should arrive at by the preceding considerations, is that it
is in all respects analogous to the vibrating Cord fixed at both
ends. But this is not the case, for we find 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.

It is usual first to give the theory of the 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 motions will then
keep the parts of the middle untouched. This is a suf-

cient explanation of those modes of vibration 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 sup-
pose 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 heard in the tube. A tube, however, is not a pipe,
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 pipe
alone. We do not intend to go into this subject; the reader
may find it fully and accurately treated in an excellent
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
their attention), but none whatever (so far as I know)
when the pipe is open at both ends. In the former case, as in a reed
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 rarefied 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 converted; and the whole effect of that velocity has produced a 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 com-
plete undulation belonging to the whole length of the
pipe is discharged. Impeded as 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 whose extension our inten-
ion of confining ourselves in the present article.

PIPE (measure), a name given to two Hougheads
of the old wine measure; two hougheads of ale or beer were
called a butt.

PIPE-OFFICE, or more properly the Office of the Clerk of
the Pipe, a very ancient office in the court of Exchequer.
This was formerly at Westminster, but removed to Somer-
set-house towards the close of the last century, where the duties of the office were performed, and where the records belong-
ing to it were kept till the abolition of the office of clerk of
the pipe, and with it that of the comptroller of the pipe,
by the act 3 and 4 William IV., c. 99. By that act the
records which had been accumulated in the office were transferred 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 and the office of the surveyor of the forests, 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. 

So far as this office is 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 satisfactions and other accounts 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 1829—

'The antedated entries of this roll have been lost. The certain revenue consisted of farms, fee farms, castle-guard rents, and other rents of various kinds; the casual part was composed of fines, issues, amercements, recognizances, profits of lands and tenements, goods and chattels received into the hands of the crown on process of extents, outlawry, diem clausit extremum, and other writs and process; wards, marriages, reliefs, suits, seignories, felons' goods, deodands, and other profits casually arising to the crown by virtue of its monies.' (Report of Commissioners of Public Records, 1837, p. 198.)

Of these annual rolls there is a series commencing in the second year of King Henry II., in the year of our Lord 1155, and continuing the crown breaking up of 1344, a period not far from 180 years. 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. Many of these rolls have been lost. Approaches, as we see, 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 soil, distinguishing 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 saved 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 50th year of King Stephen. Accordingly it has been regarded in the office as a roll of that reign, and as the roll of the 4th of Stephen it has been repeatedly quoted by historical writers, and especially by Dugdale, in his 'History of the Baronage of England,' and other historians. It has been published by the late commissioners on the public records, and Mr. Hunter, one of the sub-commissioners, prefixed to it a dissertation 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. Besides 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 as it differed but slightly from the great roll and 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 directed the public records to the moval of it to the British Museum, where the several rolls may now be consulted under the same regulations to which the other manuscripts in that depository are subjected.

The seeking the origin of the name of pipe as applied to this officer and to the rolls of the record, are scarce 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 convenient to quote the reasons set forth under either of these.

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 along with the Areca Catechu, for the sake of 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. 3129.)

It is also employed, in the form 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 black pepper-corns, but, according to Blumen, P. canarium, Rumph, which is the P. cubebe of Roxburgh, yields the greater portion of the cubbes of commerce. The fruits of both are staked, but that of the former is larger and has more pungency than 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. pedicellatum), more or less round, of a blackish-grey or greyish-brown colour, and covered with a hard round oily seed. The husk has a pleasant taste; the seed a bitterish, acid, peppery, aromatic, and caiman-flavour.

Those which grow from the islands of the Indian archipelago are the best. A sort from the Mauritis, small, or about the size of a millet-seed, are from some unknown species. The Guinea or African cubbes is the produce of Piper Afzelii.

Indian cubbes are frequently adulterated with black pepper, pimento berries, or the fruits of the Rhamnus catharticus. Genuine cubbes consist of waxy matter, two kinds of volatile oil, a peculiar resin (cubebin), balsamic resin, &c.

The volatile oil by rest deposition a camphor, which crystallizes in four-sided plates. The resin is analogous to that of copaiva, and has, like it, a peculiar influence over mucous membranes, especially those of the utrino-genital organs.

PIPER LONGUM, a nature of the East Indies, the female spick 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 as the black pepper, and possesses the same medicinal properties, and is said 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, and much cultivated in Java and Malaya, plantating stretching from the 9th to the 11th degree of E. long., 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 Moringa (or horse-rasine tree), 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. These 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 smaller, smoother, of a glistening white colour, tending to yellow, with a less powerful odour and taste than the black.

According to the analysis of Pelletier, black pepper contains an essential soft resin, a volatile oil, pigments, aromatic, gum, bassorine, malic, and tartaric acids, salt, &c.

The odour of pepper is probably due to the volatile oil, which is not acrid; the pungent taste is most likely owing to the resin. P. cubeba, the exact nature of which is not ascertainment, when perfectly pure is nearly tasteless and
colourless; 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 either from all resin, it seems devoid of power, and the fabulog 객체ives ascribed to it belong in reality to the acrid 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 intermittent fevers, and in cases of impure purges. As a means of preserving the quality of black pepper, and as a means of preserving, it should be used in small quantities, and the seeds should be used in a boiled state. Piperaceae. A natural order of incomplete Exogon. is composed of climbing or creeping plants with alternate or opposite exstipulate leaves, jointed stems, and spurred naked flowers consisting of an ovary containing a single erect ovule, and of from two to an indefinite number of stamenes. The fruit, when ripe, is more or less flask, indehiscent, and contains a single seed filled with albumen. The outside of which, enclosed in a vellitum, is a minute embryo. Justius originally regarded these plants as members of the Urticaceae. order; but from its environment, in which it has been followed by all botanists. There is however some difference of opinion as to their class, some regarding them as Exogones, and others as Endogones. See Lindley's Natural System, ed. 2. p. 153, for an account of these opinions. The general properties of the order are aromatic, as in the peppers of the shops. [Piper.]  

1. Piper alpinum, a, portion of the spike of Piper aromatissimum; b, a section of its leaf; c, its embryo. 

Piperin, a peculiar principle of black pepper, first described by Oersted in 1819. It is obtained by digesting coarsely powdered pepper repeatedly in water, and the insoluble portion in alcohol. The purest solution evaporated to the constancy of a syrup yields crystals, which, when purified by animal charcoal, possess the following properties: they are pale straw-coloured four-sided prisms; have but little taste, are insoluble in cold water and slightly soluble in hot water; readily soluble in alcohol, less so in ether. Piperin dissolves readily in acetic acid, and by evaporation it is obtained in plumose crystals; sulphuric nitric, and muriatic acids, when concentrated, alter its nature, and when diluted they have but little action upon it. To concentrated sulphuric acid it gives a blood-red colour; to nitric acid, a greenish-yellow, then orange, and at last a red colour; and to muriatic acid, an intense yellow. 

Piperin is distilled at 212°, and when distilled it yields water, acetic acid, oil, and carburetted hydrogen gas. 

P. C. No. 1195

Analysis according to Liebig:—Carbon, 69.78; hydrogen, 6.69; oxygen, 19.43; azote, 4.10. 

Pipillo. [Tana.grinum.] 

Pipowdria, a name given to a family of Dentirostres, by Mr. Vigers, who remarks that those birds which we denominate Chalcosiidae, a family which contains the birds of the genus Meleides, are usually assigned a place near the family Meliodes; 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. iv.), did it not, plain, feel considerable doubt whether this was not their natural station. A strong affinity however, on the other hand, seems to unite them with the widespread Peracris, 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 Meliodes, and the extremes of the Fissirostres, which precede it. The general rule of placing the families in a convenient situation, according to what appears to be the predominance of their more important characters, inclined him however to arrange the birds of which he speaks provisionally among the Pipridae, at the extreme termination of the Meliodes. 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 (Musuracidae), appear to predominate. 

More accurate knowledge, he adds, will clear away these and similar difficulties. 

Thus much Dr. Vigers observes when treating of the family Meliodes. He next treats of the Sylvides, and, on leaving that family, he remarks that the true Wrena of the Sylvides is the genus Motacilla, in their general appearance, habits so close a similarity to the Parus, Linn., the Titmose of English naturalists, that he thinks we may at once acknowledge the affinity between the latter family and that of Pipridae, upon which he enters by means of the Parus. 

Who is there," says Mr. Vigers, "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 Titmose, P. pendulina, Linnaeus, longer and more slender than the bill than the Parus in general, seems to be the connecting link between the families. That species is immediately met by the genus Tyrannulus of Vieillot, which, in the name of Rollet, Messeigne, conferred by M. Buffon on the American species of which it is composed, happily illustrates the affinity which I have ventured to point out." Mr. Vigers further remarks that the same affinity is indicated by the antient British name of the Goldfinch, as called in Catesby's British Ornithology, Syrinx, that is, according to Ray, Parsus chrysophaerus; and he proceeds to trace another affinity between the conterminous groups of Wrena and Titmose in their mode of nidification. The greater portion of both, he remarks, make their nests in holes of trees, into those groups which more nearly approach each other, viz. Regularus, Tyrannulus, and Parsus pendulina, suspend theirs from the branches, leaving the orifice at the centre, and introducing the materials of which they are composed, corresponding ingenuity and elegance. The contiguity of this

Vol. XVIII.—2 A
small group, he adds, to those of Carduelis, Plocas, and Xanthornus, in the succeeding tribe of Conirostrae, seems to point out the cause of this singular affinity. But though the affinity between these birds has been acknowledged scientifically, as well as by common observers; as the former, Mr. Vigors remarks, have generally ranked the Puri in a different tribe, and some indeed, he adds, have even ranked them in a different order from the Stipitaeae, in consequence of their more perfect absence of the synial and notorial notch. ' A rigid deference,' continues Mr. Vigors, 'to those particulars which form the characteristics of the conterminous subdivisions would certainly exclude the Puri from the present order.' But the study of their habits, 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 Sylviadeae, which passes on to the Conirostrae, 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 status as a group where the hard-billed and granivorous birds and general economy would naturally place them.' Mr. Vigors then goes on to observe that the Puri, which thus introduce us into the present family, lead on to the more typical groups of the Linnean Pipire, with which they bear an acknowledged affinity, and general appearance. He thinks that the genus Pardalotus, Vieill., which is the representative of the latter group in Australia, appears to connect these two allied groups of the Old and New World, by exhibiting the nearly divided foot of the one and the partially curved bill of the other. Here Mr. Vigors is of opinion that Rupcota, Briss., and Phalabora, Vieill., come in: and here, as he had already observed when speaking of the Thrushes, he adds that all these groups will be found, assembles, which, connected with Amplis, Linn., are generally denominated Berry-eaters and Chatterers; such as Bombycilla, Briss., the true Amplis of authors, Cassia, rhynchos, Tex., and Pernis, 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 Muscipacula rubricollis of Gmelin, is strongly allied by its bill to the foregoing genera, while its habits equally ally it to the family of Muscipacidae, which follows. The interval between the present groups and those of the Puri, 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 Muscipacula nemoricola, Lath., is the type. These, united many external characters at least, both of the Berry-eaters and Flycatchers, exhibit also in general appearance a considerable resemblance to the Puri, 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 Muscipacidae, 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 Dentirostrae.'

M. Lesson, who adopts Mr. Vigors's family, makes the Pipridae consist of the genera Rupcota and Calyptomena (which will be treated of in this work under the title Rupcota), Pipira, Pardalotus, and Phalabora.

Mr. Swainson does not admit the family Pipridae, but he makes the Piprinae a subfamily of the Ampelidinae. [Pipiranae.]

Pipiranae. Mr. Swainson's name for the Manakin, which he makes a subfamily of the family Ampelidinae, Fruit-eaters or Chatterers, and thus characterises:—

Size small, always elongated, slender. Bill very short: the upper mandible much curved.

Mr. Swainson is of opinion that the Pipirinae, called manakin from their diminutive size, which is seldom larger than that of a tom-tit, constitute the sub-groupal character 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 Cotingias. They live in little bands, are continually in motion, and feed almost entirely on the large soft berries of the different species of Malastoma. The nest of one species, P. parvola, 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 papery-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 Calyptomena cristata, the genus Pipira is united to that of Pardalotus, Vieill., or the spotted manakins 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, continually singing a short but pleasing song in passing from tree to tree. This genus, in all probability, represents that of Diceros among the honey-suckers, and Euphonia among the tanagers. The subgenus Metopis seems necessary to connect Phainicrinus with Pipira; and there are one or two birds evidently belonging to this division not yet described, which, by their stronger bill, excv a tendency towards uniting with Leiothrix.'

Phainicrinus. Pipira (with its subgenus Metopis), Calyp- tuma, and Pardalotus, are the genera arranged by Mr. Swainson under this subfamily.

Phainicrinus. (Sw.)

Generic Character.—Size and habit of Amplis. 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; toes feathered, on their inner side only, as far as the toes; claws strong, curved. (Sw.)

Example, Phainicrinus Carnifex. (Amplex Carnifex, Linn.)

Description.—Five-red, with a bright red cap; back reddish-brown; breast blood-red; tail-feathers purple, terminated by ruddy-black. Female reddish; abdomen ochraceous; front reddish.

The Caralis designates this magnificent bird by the names Arauca and Aipia.

Locality.—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.**

**Metopias.** (Sw.)

**Generic Character.**—Front with an elevated compressed crest. Wings lengthened, very broad. Tail broad, lengthened, rounded. (Sw.)

Example, Metopias 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.

---

**Cyphopterus Cristata.**

**Pardalotus.** (Vieill.)

**Generic Character.**—Bill as in Cyphopterus. Wings long, pointed; the three first quills of equal length. Tail short, even. Feet strong; lateral toes free and equal. (Sw.)

Example, Pardalotus punctatus.

**Description.**—Male. Gray above, undulated with yellow; head and wings black, dotted with white; a white line above the eye; rump fire-red; abdomen whitish; throat yellow.

**The female has the head dotted with yellow points.**

**Locality.**—Australia.

**Habits.**—Mr. Caley states that this species is called Diamond Bird by the settlers, from the spots on its body. He adds that it is a valuable bird on account of its skin, that it is not very plentifully met with, and that it inhabits both forest-land and bushes, at least he had seen it in both. (Description of the Australian Birds in the Collection of the Linnean Society, Voglers and Horstel, in Linn. Trans., vol. xiv.)

---

**Metopias Galeata.**

**Calyptrua.** (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 syndactylic. (Sw.)

Example, Calyptrua 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.

---

**Pardalotus punctatus.**

Mr. G. R. Gray makes the Piprinae the second subfamily of the Amphilochia, Pycnoptilinae being the first; and he arranges under it the following genera:—


PIQUET, a corps of troops detached from the main body of an army, when in position or in cantonments, and disposed about it in parties so as to form a chain of outposts for its security.

As an army depends for its safety upon timely notice being obtained of the movements of the enemy, in order that it may prepare itself to repel an attack, it is of the utmost importance that the advanced posts should be dis-
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 be placed on a point or by river or any 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 hold of the enemy. In the latter country the former may be numerous, but in one much enclosed or abounding with obstructions, the latter alone can act efficiently.

In the French service, the term "piquet" is applied not to the whole corps of troops at the outposts, but to the particular bodies of cavalry or infantry, from 100 to 500 strong, which are stationed at intervals from each other at about half a league from the army which they cover. Detachments from these, constituting what are called the main guards or rallying posts, and varying in strength from 20 to 100 men, are sent forward about half a mile further; and at about an equal distance beyond them are established posts of observation, consisting of parties of from 5 to 20 men. From the last are sent out the vedettes, as they are called, if of cavalry, or the sentinels, if of infantry, in the proportion of one man for every four or five of their number. They are placed at the distance of 300 yards in advance of the posts of observation, constitute the outer circumference of the chain.

A nearly similar method of forming the chain of advanced posts of the enemy's army of occupation, when in the field; and it is evident that, by such a system, any movement of the enemy must be known in time to allow the necessary measures to be taken for frustrating its object.

The several corps or parties of troops employed on outpost duty are commonly posted on elevated and advanced points of ground, in order that they may be able to observe the enemy; and particularly that they may command the roads or passes by which he may advance towards the position occupied by the main army. They are posted not only in possession of villages or isolated buildings, if such there be; otherwise, when liable to be annoyed by the enemy's parties, they obtain cover from walls or embankments, or from small breastworks thrown up for the purpose. The lines of approach to the position should be blocked up by abatis, or intersected by trenches, so that the progress along them may be impeded; and some of them should, if possible, be rendered entirely impassable, in order to diminish the number of points to be guarded. The advanced corps should also have the means of succouring each other when necessary, and of retiring when in danger of being overpowered: for these purposes a system of communication is always found feasible, either by roads or by embankments. The officers of the enemy's army, who are often posted, have the same order of command as they have in the main army.

The outlying vedettes or sentinels should be placed in situations where they may be able to see all the ground from one to another; and parties of cavalry should be constantly moving between these and the interior posts. It may be added that patrolo intended to act offensively are frequently employed in reconnoitring the ground leading to the enemy's position, in endeavouring to surprise his sentinels, and to break with the troops in his outpost in any part of the chain. The principal corps which form the chain are expected to defend for a time the posts which they occupy; and, on this account, they are frequently provided with a certain number of pieces of artillery, which they do dispose, under cover of an embankment, that the fire may be directed along the line by which the enemy must advance. The smaller parties however are instructed to resist no longer than may be necessary to enable them to ascertain the force of the enemy's main position in their sector of their duty. In ascertaining these points, notice must immediately be sent to the nearest officer in command of the outposts; for which purpose, and also for the general transmission of orders or reports which may be given by the officers joined to each post of infantry. On establishing the chain, the several parties or individuals should be informed at what particular points they are to rally in the event of being driven in, and by what routes they are to arrive at those points.

At night the outlying parties are generally reinforced, or are made to take less advanced positions; and other parties are always kept in readiness to increase their strength still further if necessary. In the event of an enemy appearing, the sentinels, having given the alarm by discharging their guns, are to place themselves in any part of the line, by order of the officer in command of the outposts, and there fight it out. They are not to retire to the main guard, unless it be necessary, and, if necessary, for drawing out the army in order of battle to receive his attack.

PIRACY, PIRATE (immediately from the Latin pirata, and remotely from the Greek πηρατος, piratos), a term signifying a privateer or lord pirate. The crime of piracy, or robbery and depredation on the high seas, is an offence against the universal law of society; a pirate being, as Blackstone expresses it, "hostis humani generis" (4 Bl. 76). With protected pirates, Lord Stowell observed (2 Dods, 244), "there is no state of peace. They are the enemies of every country, and at all times; and therefore are universally subject to the extreme rights of war."

Molloy, an ancient writer on maritime law, but whose doctrine it would be dangerous to adopt in these days, says, "If a pirate be attempted on the ocean and the pirates are overcome, the captors may immediately punish them with death, and not be obliged to bring them into any port, provided they be placed in the possession of war vessels, where they shall be obtained. So likewise if a ship be assaulted by pirates, and in the attempt they are subdued and taken, and carried into the next port, if the judge openly rejects their trial, or, what is the same thing, discharges them, the ship may in certain peril and loss, they may do justice on them themselves without further delay or attendance." (Molloy, De Jure Maritimo, chap. iv., sec. 12, 13.)

There is said to be a fashion in crimes; and piracy, at least in its simple and original form, is no longer in vogue. There was a time when the spirit of buccaneering approached in some degree to the spirit of chivalry in point of adventure; and the practice of it, particularly in Spanish ports, was a regular commercial proceeding. The spirit of the Spanish colonies, was thought to reflect no dishonour upon distinguished Englishmen who engaged in it. The grave judge (Sealiger) observes, in a strain rather of doubtful compliment, "Nulli melius piratacum exercerit quam Anglia." (Lord Stowell, 2 Dods, 574.)

The offence of piracy, by the common law of England, consists in committing those acts of robbery and depredation upon the high seas, which, if committed upon land, would have amounted to felony there. (4 Black., 72.) By statute some other offences are made piracy, as by stat. 11 and 12 Will. III., c. 7, if any natural born subject of the crown of Great Britain or Ireland be armed, clothed, or otherwise furnished by any of the subjects of another king, or by others of his majesty's subjects, under colour of a commission from any foreign power, or if any commander or other sea-faring person shall betray his trust, and run away with any ship, boat, ordnance, ammunition, or goods; and if he shall afterwards voluntarily take ship or vessel, and do these acts; or if any person assaults the commander of a vessel to hinder him from fighting in defence of his ship, or confines him, or makes or endeavour to make a revolt on board, he shall for each of these offences be adjudged a pirate.

By the stat. 8 Geo. I., c. 24, the trading with known pirates, or furnishing them with stores or ammunition, or fitting out any vessel for that purpose, or any conveyance contained in confederating, confederating, or corresponding with them, or the forcibly boarding any merchant vessel, though without seizing or carrying her off, and destroying or throwing away any of the goods on board, shall be deemed piracy. (See further on this point, 4 Black., 72, 269; and Abbott, On Piracy, 140, 141, 142, 230.) Lastly, the stat. 5 Geo. IV., c. 113, sec. 9, makes the dealing in slavers on the high seas by any of his majesty's subjects piracy, and subjects the guilty party to the punishment of a fine.

Persons guilty of piracy were formerly tried before the judge of the admiralty court according to the rules of the civil law, but this was altered by the stat. 28 Henry VIII., c. 15, which firmly established the judges of the court of admiralty as the judges of oyer and terminer, and that the course of procedure should be according to the law of the land. Further provision was made with respect to the trial of offences on the high seas by the statutes 23 Geo. III., c. 15; 43 Geo. III., c. 115; 46 Geo. III., c. 24; and now, by the
PIR
def. 4 and 5 Will. IV., c. 36, sect. 22, the trial of offences committed on the high seas is in the Central Criminal Court.

PIRÆUS. [ATHENS.]

PIRANESI, GIOVANNI BATTISTA. born at Venice, in 1726, was one of the most distinguished artists of the last century and his Rock-cut drawings of 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, and the gratification of his love for those crabulous caverns which have no Clydeform prolongation, handsomely on the sides of the carved surface, which is much wider than is long, arched in front, and strongly truncated on each side posteriorly.

PIRANESE, MELANIANI; MLANIOPI, vol. XV., pp. 76, 77.]

PIRIMELA. Dr. Leach's name for a genus of Crab, placed by M. Milne Edwards among the Cancerina Arques, which have a skeletoniform prolongation, handsomely on the sides of the carved surface, which is much wider than is long, convex and strongly bossed.

The front narrow and armed with three pointed teeth. The lateral and anterior borders are directed very obliquely backwards and forwards, 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 antennae are bent upwards, but not so much as on Pintedoni cinii. The external antennae are very long, but not as in the first joint, which is lodged in a gap of the orbital angle, is very short, and is not prolonged nearly so far as the basilar joint of the internal antenna; the movable stem of these appendages springs consecutively in the internal orbital canthus, as in Xantho, &c. The external jaw-feet, instead of fitting into the buccal frame, as in all the preceding genera (according to the arrangement of M. Milne Edwards), advance upon the epistome, and instead of carrying the succeeding joint at the anterior and internal angle of their joint, they give insertion to it towards the anterior third of that joint. The external plastron presents the same disposition as in the Crab, &c.; its length only exceeds 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 denticaudata.

Description.—Carapace smooth, but strongly bossed on the stomachal, genital, and branchial regions, and concave in the anterior part of the maxillae; the branchiostegal membranes not reaching beyond the level of the middle of the genital region.

Pinctes furnished with a small crest above, and with one or two carinate lines on the external surface. Length about six inches.

Localities.—Coasts of Europe, England and France.

PIRMASENS is a well-built fortified town in the Bavarian province of Hesse. It is of great importance to the Palatine, Ludwig, and insurance, and accordingly, the town greatly declined, and after being almost entirely changed in the various cessions of territory that ensued, was at length annexed to Bavaria. It now has about 5000 inhabitants. The palace, the town-hall, the Lutheran school, and the Lutheran church and Calvinist church are very large buildings. There is also a large building for exercising troops in bad weather. There are some vinegar-factories, and musical instruments are made. In the year 1703, the duchy of Brunswick obtained an advantage over the French near this town. Pirmasens is 13 miles east-south-east of Deutz-Pont, 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

Pirimela denticaudata.

[Note: The text is a mix of natural language and Latin, discussing an artist, architecture, and marine life.]
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 church, which is one of the finest Gothic churches in the empire, and the Catholic church, which belonged to the Dominican convent founded in 1301. The lyceum has been converted into a school. A Roman Catholic church was founded in 1580, and a smaller one in 1632.

On the outskirts of the town, called Lichtenau, 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 cloth, stockings, hats, leather, ironmongery, starch, etc. 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 quarries of other 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.

PIRÓN, ALEXIS, born at Dijon, in 1689, studied the law, took his degrees, and practised as an advocate in his native town, but his next home was Paris, where he 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 pronounced several comedies and tragi-comedies, 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 popular in his time. He wrote also Tales, Odes, and other light pieces, of which the best known is an account 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 some attractive personal qualities, and he found friends among a higher order of men. Montesquieu obtained for Piron a pension from the king of 1000 livres; the count of Livry, Maurepas, the duke of Nevers, and other great personages patronised him. He was married at a mature age a woman of mature years, and lived very happy 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 Rigoleau de Juvigny, 7 vols. 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 men of letters. The name Frangipani, by which he is known in France, is said to have been suggested by his passion for foliage which, although he had sought, although he had sought, although he had sought for it, he had not been able to find it, in a similar epigram, written by himself:

"C'est les derroits, qui s'en fur tenus
Les Sahhenses Amoureux."  

PIASA. The Compartment or Province of Pisa, one of the administrative divisions of Tuscany, is bounded on the north by the duchy of Lucca, on the east by the province of Florence, on the west by the sea, and on the south by the department of Grosseto. It was detached from the province of Siena. [Siena.] The province of Pisa comprises: 1. The lower part of the basin of the Arno, with a small part of that of the Serchio. 2. A hilly range, called Montemenero, or Monti Livornesi, which forms the boundary of the Arno on the south, and runs close to the sea south-east of Livorno. 3. The basin of the Cecina, south of the hills just mentioned. The river Cecina rises in the range of high lands, between 1000 and 1500 feet high, which divides the Maremma, or maritime lowlands, from the valley of the Ombrore in the province of Siena, and, after a tortuous course of about 40 miles in a western direction, enters the sea by two mouths in the gulf of Vada, 22 miles south-east of Livorno. 4. A small part of the mouth of the river Cecina, and extending along the sea-coast and between them and the hills for about 12 miles, as far as the Torre S. Vincenzo. South of this point is the district of Piombino, a small part of which is called the Malea. In the year 1849 a number of late years has been annexed to the Compartment of Grosseto. To the east of Piombino is the district of Campiglia, in the valley of the Cornia, which has likewise been detached from Pisa and annexed to Grosseto. 5. The island of Elba, which belongs to the commune of Marciana. 6. Several detached districts, or "enclaves," as the French call them, situated to the north between the territories of Lucca, Modena, and Parma, but which belonged of old to the grand-duchy of Tuscany, and are appurtenances to the administrative province of Pisa. These divisions are: Barga, in the valley of the upper Serchio, between the states of Lucca and Modena [Garfagnana]; Bagno and Firenzana, in the valley of the Magra at the foot of the Apennines, in the region called Lunigiana, which is now divided between Modena, Tuscan, and Sardinia [Modena, Duchy of]; Pontremoli, still farther north, near the sources of the Magra, and at the foot of the Apuan Alps; Terramara, or "Terrarum," near the valley of the Taro in the state of Parma. Pontremoli is a small town with a castle, which is mentioned in the history of the middle ages as commanding an important pass from the Tuscany to the Duchy of Milan. It stretches from the sea to the foot of the Carrara Mountains, or Alpe Apuana, and is chiefly noted for its marble quarries at Sorrevazza, which are of the same description as those of Carrara. The area of the whole province of Pisa is about 1350 square miles, and the population in 1835 was 326,570. (Serristori, Statistica d'Italia.) It is divided into 15 districts, containing in all 53 communes. The districts are: Pisa, Livorno, Rosignano, Guardistallo, Poma- rance, Pecchioli, Pontedera, Lari, Vico Pisano, Bagno, activation, Pontremoli, Piombino, Terramara, and Portoferraio, or Elba. The principal towns are: Pisa, Livorno, and Portoferraio. [Elba.]

PIASA, one of the principal towns of Tuscany, and the seaport next to Florence, is situated in a plain, through which flows the Arno, forty-five miles west of Florence, thirteen miles north by east of Livorno, and about four miles from the sea-coast. The town is divided by the river into two parts, to each of which the population in 1835 was about 19,000; the part on the right bank is that of marble. The circumference of the walls is about six miles; the quays along the Arno and several other streets are wide, well-paved, and lined with handsome buildings, the houses of the town having a sleepy, listless, and the green grass in many of the streets. The population, which once exceeded 100,000, is now hardly 20,000. The four most remarkable buildings of Pisa, the cathedral, baptistery, belfry, and Campo Santo, are grouped near one another in a vast open space at the western extremity of the town. The duomo, or cathedral, begun in the eleventh century, is a splendid Gothic structure, cased externally with marble of various colours, and ornamented with numerous statues, the finest of which is the figure of the Virgin, in marble of the Carara marble, without much taste. The interior of the church is rather dark, the light coming in through small windows of painted glass; the nave is divided from the rest of the church by five arches of granite; and the three bronze gates of the façade are ornamented with emblems.

The dome is one of the earliest constructions of the kind among the churches of Italy, though posterior to those of S. Vitale at Ravenna and St. Mark at Venice. The spiers, or "enclaves," as the French call them, have been detached from Pisa; other statues and sculptures by the same, and by Giovanni da Bologna and other artists, are in various parts of the church. The paintings are by Andrea del Sarto, Razzi, and other artists of the sixteenth century. The statues are by Savorgnan, Sorri, Rimainaldi, Sogliani, and other masters. The pavement is of marble of various colours. This magnificent temple was erected by the architect and mechanic Bus-chetto and his successor Rainaldo.
The baptistery, detached from the church, is round, and entirely cased with marble. It was built about the middle of the twelfth century, by the architect Dottori di Pis. It is ornamented by numerous sculptures; the pulpit in particular is considered a masterpiece of Nicola Pisano. Buonarroti and the Florentines.

The belfry is a round tower, likewise cased 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 architect William of Benevento, disciple of Guiniforte Dandini. 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 Pis, is a long parallelogram, 140 by 100 feet. Inside there are the tombs of the famous people of Pisa, as 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. [Nicolò di Pis.] 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 colt raccolti, 1816.)

Several antient sculptures and other remains of antiquity are still to be seen, not far from here. This was the burial place of the Counts Beatrice, the mother of Matilda, of Alga-

The church of S. Stefano, belonging to the military order of that name, which was founded in 1561, by the grand-duke Cosmo, for the purpose of crusading against the Barbary pi-

The church of S. Frediano, with the belfry of the work of Nicola Pisano; 4, S. Michele in Borgo contains the monument of Guido Grandi, a celebrated mathematician and antiquarian, and contemporary of Newton, whose MSS., in forty-four volumes, are in the university library; 5, 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 Lanfredi; 7, The della Scala, father of its annual contest, and death. It also forms part of a structure called Palazzo dell’ Orlogio, on the Piazza dei Cavalieri; 8, 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. Roio, belonging to the grand-duke, three miles from Pisa, near the sea, is one of the richest in Tuscany. Just beyond the walls is 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 frequented, and droug.

The present church is in the middle ages by the countess Matilda. The present church is of the last century. They are not so much frequented as they used to be, people re-

History of Pisa.—The origin of Pisa was a matter of doubt until 1870, when Carlo Ciano learned that the opposite theory 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 Etrusci in Elys, and Virgil (Aenid, v.) adopts the same tradition. Livy (iv. 1) says that Pisa was taken by the Tyrrhenians from the original Ligurian in-

Pisa was on the border between Etruria and the country of the Ligurians, and was probably colonized by the Etruscans. The history of Pisa during the Roman dominion is the same as that of the Aestii, and the Arno to the Maerc. 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 and the Romans. When the Etruscans were retaining, like most Etruscan towns, its municipal form of government. Livy (xl. 43) mentions that a Latin colony was sent to Pisa, at the request of the citizens, who offered a large sum of money, to release all his Christian slaves, and to promise never more to cruise
with his privateers in the Italian seas. About this time the Countess Matilda made several important donations of lands and castles to the see of Pisa, the diplomats of which are given by Tronc. Countess Beatrice, Matilda's mother, died about the same time, and the capstone of the cathedral. Doniz, in his Life of Matilda, represents Pisa as a great and flourishing emporium, whither ships and merchandise from all parts of the Mediterranean resorted:

"...a place of trade..."

It was in this period of their prosperity that the Pisans erected a magnificent temple, the cathedral, the belfry, baptistery, and Campo Santo. The Pisans sent a fleet of 120 sail to the first crusade, and their soldiers and sailors assisted at the taking of Nicea, and afterwards that of Antioch, as a reward for their services. The town of Pisa, which had been the most important of all Italian cities, had been established a factory in 1069. 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 sailed from their city, to the conquest of the feudal lords of the Balearic Islands, which were in 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 500 sail of transports, besides the crews of mercenaries and also of contingents 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, Luciani, of Varnmesia, Vene-

nus, and published by Ughelli. Several of the descriptions in this poem bear so striking a resemblance to some in Tasso's 'Jerusalemme,' that suspicions have arisen that the Italian services have been acquired with the MSS. of the deacon. In April, 1117, the Pisans, in conjunction with Raymond IV, count of Barcelona, 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 understand- ing 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 but partial chronicles 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 was also felt as a rival by her rivals, which may account for her history having been neglected.

In the year 1137, the Pisan fleet went to the coast of Nablus, in Syria, and emperor Henry II. of France took the town of Ascalon, 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. (Panucci, 'Disertazione isto-
rico-critica sul Ritrovamento delle Pandette,' in his Storia dei tre celebri Popoli Marittimi dell'Italia, Pisa, 1821.)

In the war between Frederick Barbarossa and the Lombard cities, Pisa sided with the emperor, and afterwards sent a fleet of men-of-war and several galleys to their aid, during which was sworn on his crusade. In the following century the Pisans, as Guiselines, took the part of Frederic II. against the pope. In 1238, peace was made between Genoa and Pisa, through the influence of Pope Alexander IV. In 1252 began the fourth war between Pisa and Genoa. Oberto Doria, the first naval officer of the age, commanded the Genoese. In the year 1254 he sailed out of Genoa direct for the port of Pisa with 55 galleys, and was joined by the galleys of Molitor, Robert of Leghorn, by 30 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 Pisans of Pisa, supported by another Genoese galley, 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 the Pisan fleet 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 most of them died of hunger and fatigue. These disasters put such a price on any one who would try to see Pisa must go to Genoa.' 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 demanded to be able to purchase their freedom at such a price. The women of Pisa who went to Genoa to see their unfortunate husbands or brothers were told by the jailers that 'their countrymen were dying thirty or forty a-day, and their bodies were thrown into the sea, and that such would be the fate of all the Pisans.' In 1290, Conrad Doria attacked the Porto Pisan, destroyed its towers, and sunk ships filled with stones at the entrance. (Giovanni Villani, Cronaca, b. vii., ch. 141.) From that time Pisa completely lost its rank as a maritime power, a glorious career 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 Ghedara- desca, a Guibeline feudal baron, but allied by marriage to the house of Pisan nobles. After the victory of the Guelphs in the battle of Montaperti, he was accused of betraying his country into the hands of the Guelphs of Florence and Lucca, an insurrection broke out against him, headed by the archbishop. Ugolino, being overpowered, was confined, with two of his sons and two of his grandsons, the latter being killed, in a tower near the Arno, 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 one of the most powerful and appalling descriptions.

The Pisans then appointed Guido da Montefeltro their cap-
tain-general. He recovered by force the strongholds which Pisan rule had put into the hands of the Guelphs of Florence and Lucca, and Ugolino, 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 the chief command to Uguccione della Faggiuola, a captain of some renown, who took Lucca, in 1314, and afterwards defeated the Pisans, and took Pisa. However, he was, however acted as a tyrant both to Lucca and Pisa, until an insurrection broke out simultaneously in both cities, in April, 1316. Pisa resumed its republican form of government, but remaining in a constant conflict with the Guibelines, 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 supported by the Visconti of Milan, and the Guelphs of Lucca. The former took possession of Pisa, 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 supported by the Visconti of Milan, and the Guelphs of Lucca. The former took possession of Pisa, and took possession of Lucca, and kept it till 1365, when the emperor Charles IV. obliged them to restore Lucca to its independence.
Pisces (the Fishes), the last constellation of the old zodiac. There is in the mythological stories (which are un
worthy of note) a confusion between this constellation and Piscia Australis presently to be noticed. (See Grotrius, in his notes on Aratus.) The constellation consists of two fishes linked by a string attached to their tails: they are not close together, the upper one being close to Andromeda, the lower one under the wing of Pegasia, the rect-
angular figure mentioned in Pegasia will be a guide to the position of the two fishes: the line of a Andromede
and Pegasia will be parallel to the body of one fish, and
that of Pegasia and a Pegasus to the body of the other.
The principal stars are as follows:

<table>
<thead>
<tr>
<th>Constellation</th>
<th>Right Ascension</th>
<th>Declination</th>
<th>Magnitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Andromede</td>
<td>03h 45.0m</td>
<td>00° 30'</td>
<td>2.0</td>
</tr>
<tr>
<td>B Pegasia</td>
<td>03h 45.5m</td>
<td>00° 30'</td>
<td>1.5</td>
</tr>
<tr>
<td>C Piscia</td>
<td>03h 46.0m</td>
<td>00° 30'</td>
<td>1.2</td>
</tr>
<tr>
<td>D Pisces</td>
<td>03h 46.5m</td>
<td>00° 30'</td>
<td>1.1</td>
</tr>
<tr>
<td>E Centaurus</td>
<td>03h 47.0m</td>
<td>00° 30'</td>
<td>0.9</td>
</tr>
<tr>
<td>F Orion</td>
<td>03h 47.5m</td>
<td>00° 30'</td>
<td>0.8</td>
</tr>
<tr>
<td>G Lyra</td>
<td>03h 48.0m</td>
<td>00° 30'</td>
<td>0.7</td>
</tr>
<tr>
<td>H Virgo</td>
<td>03h 48.5m</td>
<td>00° 30'</td>
<td>0.6</td>
</tr>
</tbody>
</table>

* [77] Ficorin is also 2 Arietis.
PISICOLA. one of the names for the Hirundo Piscium (Hamochoris, Sav., Ithogodelia, Blainv.), which infests chiefly the Cypridier. [Linn. Encyc. vol. xiii. p. 203.]

PISIDIA (Hissarlik) 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 inland was called Cilicia. In this region, which formed a part of Mount Taurus, the Pisidians maintained their independence under the Persian empire. (Xen., Anab, i, 9; § 14; ii, 5, § 13; iii, 2, § 23.) Neither the Syrian kings nor Persians subdued them, though the latter obtained possession of some of their towns, as for instance, of Antiokia, where a Roman colony possessing the Jus Italicum was founded. (Digg., 39, tit. 15, s. 8, § 10; Ptol., Hist. Nat., v. 24.) In the time of Strabo the Pisidians were governed by petty chiefs, and principally 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 1838, informs us (Excursion in Asia Minor, p. 163) that the rocks are generally of marble, and some of common limestone with veins of marble running through them in all directions. Mr. Fellows states that 4 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 very little wind is blown into clouds, and carried inland 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 pine-stone, and a volcanic production; the decomposed lime has in many parts mixed with this tufa and formed hills of Roman cement. The chief towns of Pisidia were Antiokia, Sagalassus, and Selge.

Antiokia, 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 Maeander. (Strabo, xii., p. 577.) It was visited by St. Paul and Barnabas, and it appears from the narrative in the Acts of the Apostles (xiii., 14-51) to have been a place of considerable importance. Its site is uncertain.

South-west of Antiokia was Sagalassus, which is spoken of by Arrian (i. 26) as a considerable city. Strabo (p. 569. Casab.) says it is also called Selgeassus, and is a day's journey from Apameia: he adds that from the acropolis to the town is a descent of near 30 stadii. The ruins of Sagalassus, according to Mr. Fellows (p. 167), are very extensive, consisting of seven or eight villages, and three or four old 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 town, and remarks that 'the whole town is a pile of superb public buildings, arranged 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 architectural ornament.' These ruins are called by the Turks Boordoom, 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 Calchas and afterwards by the Lacedaemonians, and in consequence of its good government soon became a large and flourishing town. Strabo (xii., p. 570) that at one time it contained a population of 20,000 inhabitants. When Alexander marched through Pisidia, the inhabitants of Selge sent the ambassadors to Alexander, to treat with 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 pasturage for great numbers of cattle. It was supplied with a great number of timber-trees, of which the styxas was reckoned the most valuable. Mr. Fellows visited the remains of a large city, situated about 10 miles north-east of the village of Boukhi, which are all preserved. Some of those of Selge. Mr. Fellows describes these ruins as situated 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 perhaps 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, ying with each other in splendour.' He also states that he could scarcely guess the number of temples or columned buildings in the town, but that he certainly traced fifty or sixty; and in places where there were no remains above the surface he frequently saw vast arched vaults, similar to those forming the foundations of ancient public buildings.

PISIDIA. [Porcellanians.]

PISIDIU.M. [Pisum. (Zoology.)]

PISCIS AUSTRALIS or ASTRINUS, or NOTIUS (the Southern Fish, one of the great constellations situated directly under Aquarius: 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, Fomalhaut, which only just rises above the horizon in these latitudes; when on the meridian, it is nearly in the same vertical circle with a and B Pegasi.

The principal stars are as follows:

<table>
<thead>
<tr>
<th>No. in Catalogue of</th>
<th>Character.</th>
<th>Magnitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>2511</td>
<td>6</td>
</tr>
<tr>
<td>4</td>
<td>2518</td>
<td>4½</td>
</tr>
<tr>
<td>5</td>
<td>2553</td>
<td>4½</td>
</tr>
<tr>
<td>9</td>
<td>2577</td>
<td>4</td>
</tr>
<tr>
<td>10</td>
<td>2587</td>
<td>4</td>
</tr>
<tr>
<td>12</td>
<td>2608</td>
<td>5</td>
</tr>
<tr>
<td>13</td>
<td>2644</td>
<td>4½</td>
</tr>
<tr>
<td>17</td>
<td>2660</td>
<td>5</td>
</tr>
<tr>
<td>18</td>
<td>2705</td>
<td>3½</td>
</tr>
<tr>
<td>20</td>
<td>2718</td>
<td>6</td>
</tr>
<tr>
<td>22</td>
<td>2728</td>
<td>5</td>
</tr>
<tr>
<td>24</td>
<td>2741</td>
<td>5</td>
</tr>
<tr>
<td>19</td>
<td>2642</td>
<td>5½</td>
</tr>
<tr>
<td>37</td>
<td>2652</td>
<td>5</td>
</tr>
<tr>
<td>91</td>
<td>2675</td>
<td>5</td>
</tr>
</tbody>
</table>

PISCIS VOLANS (the Flying-Fish), one of Baver's southern constellations, situated between the South Pole and Argo. Its principal stars are as follows:

<table>
<thead>
<tr>
<th>No. in Catalogue of</th>
<th>Character.</th>
<th>Magnitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>639</td>
<td>9½</td>
</tr>
<tr>
<td>8</td>
<td>645</td>
<td>9½</td>
</tr>
<tr>
<td>9</td>
<td>749</td>
<td>10⅔</td>
</tr>
<tr>
<td>10</td>
<td>768</td>
<td>10½</td>
</tr>
<tr>
<td>11</td>
<td>769</td>
<td>10½</td>
</tr>
<tr>
<td>12</td>
<td>829</td>
<td>11½</td>
</tr>
</tbody>
</table>

PISISTRATIDÆ. Hipparchus of Elis, whose death Hipparchus, the first, succeeded to the rule. Thucydides tells us that the general opinion in his time was, that Hipparchus succeeded his father; however he asserts to be a mistake, although in the same chapter (Thucyd., vi. 24) he observes incidentally that Hipparchus was the son of one of the Ambassadors from Philip, who was not a man of any estimation in his government, barely implying that he had some share therein.

Thucydides gives the brothers a character for encouraging many virtue and cultivation (λατρεύοντων, for success in war, for piety, for cities to be cultured. He says they only levied a rate of five per cent, on produce (τον γαρ ἀνδραγάστρος, and that they rather interfered in the appointments to offices than with the administration of the laws themselves. He gives Pisistratus, son of Hipparchus, among others of the family (αὐτόν) 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-
PIGO, C. CALPU'RNIUS. [Caesar: Cicero.]

PISOLEITE, or Piso-Stone, a variety of carbonate of lime, which occurs in globules from one-eighth to half an inch in diameter, imbedded in a calcareous cement; they usually consist of concentric lamellae, in the midst of which is generally a grain of sand.

PITA'CHIA NUT: the fruit of the Pitaia 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 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 smooth seed with a green embryo. The tree is originally from Asia Minor, but is now naturalized all over the South of Europe, where the fruit is in request for confectionary and for the dessert.

PISTOIA, a town of Tuscany, in the compositure or province of Florence, is situated twenty miles north-west of the capital, in a plain at the foot of the Apennines, near the river Stella, a tributary of the Ombrone, which is an affluent of the Arno. Pistoia lies on the high road leading from Florence to Modena over the Apennines. It is a well-built town, of considerable size, but rather thinly inhabited; it contains about 10,000 inhabitants, and is a bishop's see. Pistoia, or Pistoria, does not appear to have been a place of importance under the Romans, except that it was near one of the passes leading into Casalpine Gaul, and was probably a military station. In the 'Antonine Itinerary' the station is marked 'ad Pistores.' Sallust (Catiun, 57) mentions that Catilina assembled his followers in the territory of Pistoria, with the intention of leading them across the mountains into Gaul, but he was forestalled by Q. Metellus Celer, who encamped on the other side of the mountains. Pistoia was a place of importance under the Longobards, whose king Desiderius enclosed it with walls. It was afterwards an independent municipality, until it was subjugated by Florence, about A.D. 1150. It appears however that the Florentines allowed it to retain its municipal franchises, but reserved to themselves the appointment of the pesta or chief magistrate. There was an influential family of Pistoia of the name of Cancelleri. This family in course of time became divided into two families, the Trinci and the Folchi, which dispute arising among them which was attended with bloodshed, the various members of the family were ranged into two opposite factions, one of which called itself '1 Bianchi,' or 'the white,' because descended from the wife of one of the former Cancelleri whose name was Bianca. The opposite faction took the name of 'Neri,' or 'the black.' These factions having each numerous adherents and dependents, the whole town of Pistoia became divided between the Bianchi and the Neri. The people of Pistoia are represented by the

---

1, a male flower; 2, a female; 3, a ripe fruit; 4, a seed not immersed.

---

* The clerical reader need not be reminded that the wood word from which our English word bread is taken.

* The proper name of Piso-Stone is said to be derived from the infant Cassio, who was cast into the Tiber by his mother, and afterwards called Piso-Stone, on his being the first child to be called there, in the manner of books, or both, of the laws, not necessarily one who acts either with cruelty or with violence. (t. 55) expresses the same feeling of regard, as 'the public good, rebuked without either disturbing the authorities or changing institutions, and that he generally related to the end of the year established, and ordered by the Thramph." Here Pistaia was a tyrant.

* Mr. Clinton says the time is uncertain; Mr. Thirlwall gives it at 50 years.
contemporary coroners as a strong and daring, but force and quarrelsome race. Some of the Cancellieri of the Bianchi, accompanied by a leader, named Verdi Cerchi, an influential man among the Florentine Guelfs, the latter contrived to appoint as chief magistrate of Pistoia a friend of his own, called Cantino. This personage, named Banchi, was elected next elections of 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 counter-measures by which the elders of the Florentine, availed themselves of in order to 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 Florentines who were subjected to Pistoia, contrived 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 1292. [Dante.] 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, with the consequence that the punishment of 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 murdered in town or in field by the adverse faction, who were with the Florentines. Many of them, after enduring all sorts of abuse, had 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 who were not allowed to be taken prisoners, and thus they died miserably outside. (Dino Compagni, Cronaca Fiorentina.) Those who are so ready to extol the prosperity of the Italian republics of the middle ages, ought to consider, it is said, such 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 razed 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 most remarkable buildings in Pistoia. The cathedral, which was built by the Countess Matilda, in the early part of the twelfth century, and restored by Niccolo di Pisa, contains some good paintings, baso-relievo, and the marble statue of Pistoia, the bust of Dante and Ruc- caccio, a jurist and an elegant poet; and also that of Cardinal Nicola Forteguerri, 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’Umita, 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 Braccioli, Cancelleri, Rospigliosi, Tonolmi, and Forteguerri contain good paintings. (Valéry, Voyages Littéraires en Italie.) Pistoia has produced distinguished men in almost every branch of learning and art: Cino da Pistoia, the poets For- teguerri and Braccioli, Pope Clement IX, the poets Coriila, the architects Ventura and Vitoni; the painters Gerini, Malatesta, and Cipriani (who died in London, in 1731), the mathematician and orator of the Pistoias, Ognabeb, and Cor- nacchini; and many more, who are described by Domenico his ‘Guida di Pistoia.’ [Svo., 1821; by Zaccaria, ‘Bibliotheca Pistoienis descripta,’ Turin, 1744; and by Cipriani, ‘Notizie Inediti della Sagrestia Pistoiese dei beni Arredi,’ Pisa, 1813.] Pistoia has also published an interesting biography of Cino, ‘Vita e Poesie di Messer Cino da Pistoia,’ Svo. Pisa, 1813.

The history of Pistoia has been written by Fioravanti, ‘Memorie Storiche,’ Lucca, 1759. The history of Pistoia and Pisa, written by a Pistoian priest, was printed in Florence, by Giunti, 1578. Viani has written ‘Della Zecca e della Moneta di Pistoia,’ Pisa, 1813.

PISTOL. [Arms.] PISTOL. [Siege.] PISTON. [Hydraulics.] PISUM. [Pea.] PISUM (Zoology), Megerle’s name for a genus of conchi- laria. (Pisum spinosum.) PISTONS (in armament), pistons, or cylinders used in the interior of guns. PITCAIRN’S ISLAND is a small island in the Pacific, the centre of which is in 25° 30’ S. lat. and 130° 58’ W. long. It is about seven miles in circumference, and very high, with precipitous sides, and without anchorage. The western shore is fertile, and is the home of one of the former inhabitants of the island. The island is 1109 feet above the sea-level. The ascent of the beach is generally extremely steep, and two of the three landing-places are not used. The third landing-place is on the north side of the island, but the approach is very dan- gerous. The soil which covers the rock consists of clay mixed with sand; it is very rich and of great depth. It is supposed that the island could maintain a population of 1800. There is only one well of good and one of indifferent water. Most of the mountains are still covered with trees. This island, which was discovered by Cook in 1777, now contains a colony of Englishmen and Otaheitean women, whose offspring form the whole population of the island (Otaheitean [blush].) Fletcher Christian sailed first to Toobooi, one of the Pamato Islands, and then to Otaheite, where he took in animals and plants, and then returned to Toobooi, with the intention of settling there, but in 1830 part of his crew in Otaheite and taken with him six males and twelve women. But not finding the natives of Toobooi inclined to permit them to settle on their island, he established his colony on Pit- cairn’s Island in 1780. This island was first visited by an American vessel in 1814, and after this by the British, in 1814. In 1826 the island was surveyed by Captain Bee- chey. As a report prevailed that the inhabitants suffered much from want of water, a vessel was sent to remove those who were not disposed to go to Otaheite. They went to Pit- cairn’s Island in 1831, when the population had increased to 87 in number. But the new settlers found that they had not improved their condition by this change, and they returned to Pit- cairn’s Island in 1832. They are a fine and robust people, high-spirited, and intelligent, and both the language and English languages fluently. Their food is chiefly vege- tables. Yams, which are abundant and of excellent quality, are the principal article of food. Cassava-nuts, ban- anas, and sweet potatoes, also grow, but there is a scanty crop of indifferent fruit. Swans, goats, and do- mestic fowls are reared, and fish is rather abundant. Be- fore their removal to Otaheite, the islanders were distin- guished for their simplicity, and when left to themselves in Otaheite, they have preserved it. But they have been given to drink water, that they may be encouraged to drink spirits, the preparation of which they had learnt in Otaheite. (Shipheer’s Narrative of the Briton’s Voyage to the Pacific, etc.) Recent Account of the Pitcairn Islanders, by Barrow, in London Geogr. Journal, vol. iii.; Bennett’s Extracts from the Journal of a Voyage round the Globe, in London Geogr. Journal, vol. iv.) PITCAIRNE, ARCHIBALD, M.D., was born at Edin- burgh in 1652. He studied divinity and afterwards law at that university with extreme ardour; but being obliged by the failure of his health to go to Montpellier, he there acquired a love of medicine. On his return to Edinburgh, he devoted himself to the pursuit of its several branches and to the study of mathematics, by the application of which he believed (as many of his contemporaries did) that much light might be thrown upon the whole of life. He afterwards went to Paris, and thence returning to his native place, he soon became the most renowned practi- tioner in it. In 1692 he was invited to the professorship of medicine at Edinburgh, which was the last of the university, but he was not inclined to vacate it; and when the chair in this subject was vacated, he became the occasion of the chancellor’s exceeding all the usual objections, being less agreeable to the doctrines of vitalism, which were then becoming prevalent, he held the appointment little more than a year, and then returned home, having been recommended by the faculty of his having had the celebrated Boerhaave among his pupils. He died at Edinburgh, in 1713.
PIT

189

Dr. Pitsaine's chief work was published after his death, under the title of 'Elementa Medicae Physico-Mathematica'; 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, note, or note 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, somewhat like hornstone. The duke of Leeds is lord of the manor. Concave-concoidal. Hardness 5 to 6. Colour brown, black, grey, red, &c., and variously mixed. It is generally dull, but sometimes has a resino-vitreous lustre. Translucent. Occurs in Great Britain. Specific gravity 2.9 to 2.7.

It occurs at Meissen in Saxony, at Newry in Ireland, and in the Island of Arran, and other places. Analysis of Irish pitchstone by Knox—Silicea, 72·80; alumina, 11·50; soda, 28·35; lime, 1·00; protoxide of iron, 3·03; water, 8·50.

PITCHSTONE (Geology), a siliceous rock of igneous origin, generally occurring in dykes which traverse the strata, or in overlying columnar masses. Among recent volcanic rocks (lavas) it is often met with, and it forms the characters of pitchstone in the following leading divisions:

1. Simple: a. amorphous, massive; b. concretionary.
   2. Forphyritie: pitchstone-porphyry of mineralogists.
   3. Concretionary spheroidal; pearlstone of mineralogists.

The colours are extremely various; the texture varies from almost glassy to granular, and thus allows of passage into horostone.

PITAE. [Bot.]

PITH is a cellular substance found in the centre of the branches, but not roots, of Exogens. When young it is filled with fluid and with grains of starch, which gradually disappear. The pith is used in communication with the pith of other branches, and there can be no doubt that this part is in reality a magazine of nutriment upon which the leaves may feed in their infant state. After the leaves in communication with it are organised, it dries up and dies.

The old statements that it is the seat of fertility, a tree becoming unfruitful whose pith is destroyed, like the modern assertion that it is the seat of nervous irritability, are mere fables. It communicates with the bark by means of longitudinal tracts or canals, and with the leaves by means of cords of fibro-vascular tissue emanating from the medullary sheath. In Endogens there is no pith, but the office of that part is probably performed by the cellular substance in which the leaf is inserted, the woody matter being imbedded.

PITHECIA. [Sax.]

PITHECUS, M. Geoffroy's name for the Oranges. [Ape.]

CHIMPANZEE ORANG-UTAN. [Javan.

PITIERS. [Loiret.]

PITISCUS, SAMUEL, was born at Zutphen, March 30, 1637, and in his younger days was the scholar of John Frederic Gronovius. He was appointed master of the public school at Zutphen in 1669, and at the same time was entrusted with the direction of the college of St. Jerome at Utrecht. This last employment he retained till 1717, when, being in his eightieth year, he resigns it. His most important work is his 'Lexicon Antiquitatum Romanae,' 2 tom. fol., Leov., 1713. His editions of Quintus Curtius, Solinus, Sweutosius, and Aurelius Victor are well known to classical scholars. He likewise edited Puteius's 'Pantheum Mythicum' and Rosin's 'Antiquitatum Romanorum Corpus,' 4to, Utrecht, 1701. He prepared large collections for a 'Lexicon Catullo-Tribulio-Properianum.' He died February 1, 1727.

He appears to have been an active statesman, by his death he left his head ten thousand floris to the poor. [Casp. Burmanni Trajecti Eruditionum, 4to, 1738, pp. 263-272; Chalmers's Biog. Dictionary, vol. xxiv., p. 317; Biog. Brit.; Chalmers's Biogr. Dict., vol. xxiv., p. 332-354.]

PITTS, WILLIAM, EARL OF CHATHAM, was the second son of Robert Pitt, Esq., of Boconnoc, near Lostwithiel, in Cornwall, by Harriett Villiers, sister of the Earl of Grandison (an Irish peer), and the grandson of Thomas Pitt, governor of Madeira, the most 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 Boconnoc, on the 15th of November, 1708. He was educated at Eton, where he went in 1728 as a gentleman commoner to Trinity College, Oxford. On leaving the university, he obtained a comentry 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 he was head at this time was Frederic, Prince of Wales, but for the first session he took no part in the proceedings of the House, and it would not have been given his vote. His maiden speech was delivered on the 29th of April, 1736, on occasion of a motion made by Mr. Pulteney, for an address of congratulation to his majesty on the recent marriage of the prince. The motion was seconded by the right honourable gentleman Charles de Fortis, and by the noble Lord Lyttelton, who held the office of secretary to his royal highness. Pitt's speech is described by Tindal as 'unmixed with any argument but that of declaration, and the admission of a few models of antiquity more perfect in that kind, it being more ornamented than the declamations of Demosthenes, and less diffused than those of Cicero.' Pitt's appearance and eloquence must have been imposing from the first; for
there was nothing in the matter of this speech, if we may judge from what appears to be a verbatim report of it, to put any one in mind of either Demothenes or Cicero. The animosity between the prince and his father now rose to a great height, and, among the other adherents of the father, Pits experienced the misfortune of being deprived of his commission. It appears 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 Querist, No. 131, for June, 1840.) This loss however 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 discussions of the chamber was on an opposition motion for a reduction 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 seamen, that on the 21st of January, the king is said, in the report drawn up by Johnson for the 'Gentleman's Magazine,' to have delivered his celebrated philippic in reply to the elder Horatio Walpole (the minister's brother), Lord Walpole of Wolterton, on the subject of the 'large dinners,' the 'atrocious crime of being a young man, which the honourable gentleman has with such spirit and decency charged upon me, I shall neither attempt to palliate nor deny, but content myself with saying 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 Johnson's, not that of the Pitt to whose name the sting is given.

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 on account of certain opinions he had expressed on the subject of Hanover, and the public mischiefs arising from his majesty's partiality to the interests of that electorate. It is understood also that Pelham, the framor of the new ministry, owing to a dislike which existed between him and Lord 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 undesirous to bring any one of the three last-mentioned persons into office for the present, although the most distinguished members of his party. Grenville'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 Pelham by forcing him into the House of Lords, where, from being the most powerful and influential man in England, he suddenly dropped down into a desolated position as earl of Bath, the real supremacy in the cabinet was divided, or rather it seemed divided, 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, in which year Walpole's death. Mr. Pelham was then appointed first lord of the treasury. In consequence of this change 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 impecunious character made the capital, a power offensive to the public and to his colleagues. In this state of affairs, Pitt threw himself again into opposition, and became more active and acrimonious 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 ministry, Pitt's mind was 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" in opposition was no longer a member of the government 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 determination of the king, who was far from taking the 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 his brother Richard, lord Granville, and the Duke of Newcastle, who found that 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, and on the 6th of May following he was promoted to the more lucrative office of paymaster-general. After each of these appointments he was re-elected for Old Sarum. To the next parliament which met in November, 1746, he was re-nominated, by the interest of which he purchased the seat for Seaford, 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 petition 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 body of men less formidable from the quality and numbers of its members. A few years before, Pitt's pecuniary circumstances had been rendered much easier by a legacy of 10,000l. left to him by the duchess of Marlborough, "in reeward," as her will expressed it. Afterwards to a fortune of 30,000l. which he had maintained the authority of the laws, and prevented the ruin of his country. He had therewith 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, such as it was, till his death in March, 1751. Mr. Pitt distinguished himself in his new place by a proud disdain of certain sources of emolument which his predecessors had been accustomed to claim themselves; and also 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 repudiating. His change of opinion or feeling was in some degree illustrated by a speech he made in the debate on the address of thanks at the opening of the session in January, 1751, in reference to the abandonment by the government to the enemies of all idea of excluding British ships from the coast of Spanish America—a claim which, when in opposition, he had passionately insisted ought to be made an independent topic of debate. "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 strongly 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 prerogative, which has always been considered as being very 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, had he been the Prince of a meeting of cabinet, or of the government by whom 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 Lord Grantham, fared better between Pitt and Henry Fox (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 celebrated sons also spent their days. 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 who also belonged to the cabinet, and whose seats were immediately filled by connections or dependants of the Pelhams. The arrangements now made subsisted till the sudden death of Mr. Fox, in the same session, and that of the Pelhams, in the year 1774, when the first Lord Holland 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 Miss Anne, the present lady George 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 reconstrucction of the government. On the 15th of November, 1755, Fox was appointed to the head of the cabinet, and, five 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 signalled by a series of national disasters and disgraces. In this crisis of affairs the king, after a short struggle, found it necessary to call in the popular favourite of the hour; 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 consisting entirely of men being put in power by the friends 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, which he was wise enough to resign after 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, if first lord of the admiralty, in 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 a half addressing in January to a great number 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 the leaders of the cabinet, which was afterwards to prove to be that which was 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 Lord George Grenville, and Mr. Legg, became respectively lord privy seal, treasurer of the navy, and chancellor of the exchequer; Mr. Fox was made postmaster of the forces; and even Lord Grantham obtained a seat in this comprehensive cabinet of that session alone. Upon the resignation of Mr. Pitt was chosen 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 GEORGE III. In 1748, he brought into the negotiations with Spain, as may be seen in the sanction given to their treaty of peace, concluded in 1753 by the former and supreme 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 alone. The representation the three estates of the realm are alike concerned; but the crown 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...
to 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 led to, it, 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 and submit a proposal much more permanent than the boon of the opening 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 jointed whimsy, indented and indented a cabinet so variously inlaid; such a piece of diversified mosaic; such a tesseliated pavement without cement; here a bit of black stone, and there a bit of white; patriots and courtiers, king's friends and republicans, preachers and philosophers, by degrees, and open and at times, 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 disposed of himself; he appropriated the almost sinecure 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 the noble lord had a full and strong intention of being happy, and a happy heart that he will never be able to stand upon his legs again. Everybody is puzzled how to account for this step; though it would not have been the first time that great abilities have been dined up by low cunning. In the Indian wars it will, in all probability, be the consequence of the death of Chatham, and no longer Mr. Pitt in any respect whatever.

We cannot enter into the history of the rickety administration to be set upon, but we must say 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 correspondence, and the correspondence of others to the society of society, had been chiefly mental, and to have taken the form of a deep hypochondria, making him shrunk with horror from business and from intercourse with any person beyond the circle of his intimate friends. At the beginning of December, 1770, 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 his place, and took as prominent and active a part in debate as he had ever done in his best days. One of the chief questions on which he took part 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 occasionally 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 on 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 receive a bill for carrying on his southern war, and to a bill for carrying on American affairs; and he continued to come down for the same purpose during the next session as often as the little strength remaining in his racked and shattered frame would allow. On the 7th of May, 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 to 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 seventeenth year of his age.

All the enthusiasm which had been shown in former days was revived for the moment by the 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 great events of the time. Of the immense attendance at 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 pay- ment of 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 the end of the day of the orator, the minister, and the patriot, as a result of the imme- diate effects of which there can be no question, must have partaken very much of the only half-intellectual art of acting, and being indebted for its power to his voice, his eye, and other mere external advantages, as much to remotest and 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 traditional fame. Earnestness and fervour there is, as has been said, in all, and a happy aptness of expression, there is perhaps a forcible reasoning, and a luminous disposition of the subject; but that is nearly all. Lord Chatham's elo- quence is rarely irradiated by any imaginative colouring, his mind is rarely warmed to any large extent. His style has in its ordinary rhetorical characteristic is tawdryness, and its vein of reflection common-place. Indeed it is probably to this last-mentioned quality that it was in great part indebted for the respect it received; the simplicity of it being less calculated to puzzle than to confound; it was neither intellectual nor original in its composition or habits as any man of his time. On the subject of his ambition indeed it would be easy to say much, as much has been said; and some of his letters lately published go to show that his love of power was combined not only with great haughtiness of bearing towards his inferiors, but also with no small degree of what would now at least be called subserviency to those above him. But we must one more word on the exhibition which he makes of himself, something is to be allowed for the manners and indeed established etiquette of the age, which in all departments of social intercourse is connected with the popular, and which which now seems extravagant and ridiculous, and perhaps in the present day would really indicate a much greater degree of servility than it then implied. It can hardly be dis-puted that Chatham, whatever faults he may have had, was essentially a high-minded man, and, to some extent, when we find him appearing otherwise in any particular case, to set down the defect as one of manner rather than of character.

The Life of Lord Chatham has been written by Almon, the bookseller, in 3 vols. 8vo., under the title of Anecdotes of the Life of the Earl of Chatham; and much more accurately, as well as fully, by the Rev. Mr. Thackray, in his History of the Earl of Chatham, 4 vols. 4to. Of his own writings nothing has been given to the world except a small volume of letters addressed to the son of his elder brother, afterwards Lord Camelford, which were published a few years ago by the late Lord Grenville, and his Correspondence, his Speeches, and his pamphlets, published ed variably.

The latter publication abounds in matter illustrative both of the life of Chatham and of the political history of his time. By his wife, who survived till 1805, besides two daughters, he had three sons, of which the eldest was acquired by one of whom, the subject of the next article, rivalled that of his illustrious father.
similar composition, formed by the Shelburne whigs and the Tories who, seceding from North, preferred themselves the friends of the throne. The task fell to Pitt, for who stood to bear with impatience the yoke of the new ministry. Of this opposition Pitt was the recognised leader in the House of Commons. Among other manoeuvres to which he was not averse — such as annoying and embarrassing the government, was the renewal of the old demand for a parliamentary reform. The effect, as had been anticipated, was to array Fox and North against each other in the debate and the division; but the motion nevertheless was negatived by a majority of 19. The serious opposition to the government did not begin till the next session, when Fox brought forward his India bill; but even that measure was carried through all its stages in the House of Lords by great majorities, Pitt having countered a formidable resistance when it reached the Lords, where all the personal influence of the king was exerted to procure its defeat. This object being attained, his majesty, with his characteristic decision, followed up his advantage by dismissing Mr. Fox and Lord North, when they would not resign, and by appointing Mr. Pitt prime minister, with the offices of first lord of the treasury and chancellor of the exchequer. This was in the middle of December, 1783. The state of parties was now so favorable as to give rise to the most remarkable contest in the history of parliament. In the House of Commons the force of the opposition very considerably outnumbered that of the government, even though it was now able to make up the ranks of the former; so that if the issue of the struggle had depended solely upon that assembly, it could not have been doubtful or long deferred. Nevertheless, if Mr. Pitt was fortunate in securing the support of the king, he had decidedly the nation itself on his side, and with this, backed by the support of the crown, his position was impregnable, for, if it came to the worst, a dissolution could in a moment put an end to the existence of the present ministry. The second movement in the house, mother in advantage with the prevailing popular feeling. Such an appeal to the people however was for obvious reasons far from palatable to the crown, and not to be resorted to if it could be avoided, although in such case the circumstances were as favourable for such an experiment as they could ever be expected to be, the permanent body of the House of Lords, whose union with the Commons might have considerably strengthened the latter, being already ministerial by a steady though not a very large majority. Theoretically, indeed, the crown might have made a majority for itself in that branch of the legislature more directly than in the other house; but practically, a creation for such a purpose would have involved a more violent and unconstituted revolution than a dissolution in any circumstances, and, ventured upon contemporaneously with a dissolution, would have been a wholly unprecedented stretch of the prerogative, the effect of which upon the public opinion would have been to make it for the first time, as far as can be judged, an object of general loathing, and to render it impossible to carry any act that was not the result of the consent of the people. Such, indeed, was the feeling which Pitt is said to have had in mind when he said that the feeling of the people for the crown was more powerful than the crown itself. Pitt, therefore, resolved to trust to the support of the crown. Such a support he had, and there was no doubt that it would have been sufficient if the crown had been more constant and uniform. The king, however, was not constant, and the opposition made what few efforts it could, and Pitt was able to maintain his position, with the aid of the crown, only by making concessions to it. The king was a great favourite with the crown, and Pitt's position was the result of the confidence which the crown placed in him. Pitt was able to maintain his position only by making concessions to the crown, and the crown was able to maintain its position only by making concessions to Pitt. The king was a great favourite with the crown, and Pitt's position was the result of the confidence which the crown placed in him. Pitt was able to maintain his position only by making concessions to the crown, and the crown was able to maintain its position only by making concessions to Pitt. The king was a great favourite with the crown, and Pitt's position was the result of the confidence which the crown placed in him. Pitt was able to maintain his position only by making concessions to the crown, and the crown was able to maintain its position only by making concessions to Pitt.
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 during the first nine years 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 little, and in the financial returns from 1758, the revenue had received an augmentation of 5,000,000£, of which not more than 1,500,000£ was calculated to have arisen from new taxes. At the same time the expenditure was not greater in 1790 than it had been in 1786. The administration of a new constitution for the East India Company (1784), the establishment of a new sinking fund (1786) [NATIONAL DESK. XVI. p. 100], the arrangement of a commercial treaty with France on very liberal principles (1786), the consolidation of the customs (1786), set 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 this 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, and his bill called in the hands of 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 was again put up by his friends 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 voice; 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, in the appointment of the majority in Indian government. 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 deficits of the royal authority occasioned by the incapacity of the restrain on the king. This right seems to have been 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 was adopted in 1782, and the disappointment of the expectations which he considered himself entitled to entertain of the abolition of the, 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 convicted of the incompetence of the present 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 this post to the end of his life, and until 1809, when his health began to fail, his government was without interruption. By that power in the latter part of the year 1805, it is supposed to have combined with the vexation arising from the imprisonment of his friend Lord Melville to destroy him. He had for some years been accustomed to stimulate his own health by drinking, and this habit induced him to become a regular habit in wine; and this habit also had not denied him, in shortening his days.

The public bearing of Mr. Pitt was cold and lofty; but he was known chiefly 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 meanness 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 charge of any very loud or expressed dissent, that, in every moment of delivery, it owed its success as much to the impression which it made upon the ear, and to what we may call its mere mechanical qualities, as to any diviner inspirations 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 the peculiar adornment of it. The orator was not only famous for his angry characteristic his words were a blend of the ordinary views 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 Myiotheres, or Ant-thrushes. [MERLIDE, vol. xvi. p. 122, where the generic character of the genus and that of the subgenus Chlorisoma and Grallaria are given.]

Pitta. (Vieill, Temn.)

M. Lesson remarks that, under the name of Myotheres, Illiger and Couvier united the Brises de Buffon and the dit-Thrashes, and in their descriptions 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 Malayaln Islands, whilst the Ant-thrushes belong to the Oriental series (The Friends of the People). 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 specimens of these genera, but they are of the subgenus Grallaria, Vieill, and Chamaea, Vig.; but the species are few and they are coloured in the homely hues of ordinary thrushes. To this group, as a subgenus, we refer Chlorisoma, called by some writers by the barbarous and unmeaning name of Kitta. The bill is clearly that of a thrush, while the legs place it among the Myotheres (Myiotherinae), of which it seems to be the zoological sub-genus, both on account of its size, its crest, and its affinity to Myotheres. There are two or three species, all natives of India.’

‘The genus Myotheres, on the other hand, is chiefly restricted to tropical America, and comprises numerous species. Both are not unfrequently separated from their nearest allies by the difference of one or two, and are usually already variegated with white. Although distinctly separated from the Oriental group by their abruptly-hooked and strongly-toothed bill, they are yet so intimately allied to the small bush-shrikes (Thamnophilinae) that it is almost impossible to draw a line between them. The generic character of the species which form this family may be known from the bush-shrikes, we may mention the difference in the notes—the structure of their bills is adapted for perching, which to the other is more suited for perching. The ant-thrushes are very locally distributed; for, although the group is tropical, we frequently find that a particular species is limited to the territories of one country, and barriered another by a second; while a third locality in the same territory would present us with still another kind, different from those we had previously found. Cayenne and Surinam, in particular, offer us with many species totally unknown in the forests of Brazil.’ To return to Pitta. We select, as an example, Pitta Gigas, Brise Buffon, or Giant Pitta.
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 whitish; 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.)

Grallaria. (Vieill.)

Example, Grallaria Rex (Rois des fourmiliers, Buff. King Thrush, Lath.; Turdus Rex, Gmel.).

Description.—Brown, inclining to red, lighter beneath; occiput plumbeous; forehead varied with black and white.

Locality.—Java and Sumatra. (Temm.)

Chlorisoma. (Sw.)

Example, Chlorisoma thalassinum (Killa thalassina, Piroll Thalassin, Temm.).

Description.—Greater part of the plumage very brilliant celadon-green; a velvety black band springs at the angle 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 winter have the plumage varied with these two tints very vivid and pure.

Locality.—South America, Guiana, and Brazil especially.

Chlorisoma thalassinum.

PITACAL, one of the ingredients of wood-tar, and so named by Reichenbach, who discovered it, from πίτρα, pitch, and σέμελλος, ornament, on account of its fine colour. When a little battery-water is added to impure pitch, or to oil of turpentine deprived of its colour, the liquid directly becomes of a fine blue tint, which very soon passes into the colour of indigo: like this pigment, it assumes a copper colour when rubbed, and according to its purity becomes afterwards golden or brass yellow.

Pitacal is inodorous, tasteless, and not volatile; at a high temperature it is decomposed and charred, but does not give out ammonia. It is suspended in water in so fine a state of division, that it passes through filters and gives a blue colour to the water, but it does not dissolve in it; light and air do not act upon it; it is insoluble in alcohol and ether; it dissolves in cold dilute sulphuric and hydrochloric acid; acetic acid also dissolves it readily, and the solution is of a fine red colour; alkalis restore the blue colour; nitric acid decomposes it. Reichenbach states that it is a more delicate test of acids and alkalis than litmus.

PITACAL, one of the so-called seven wise men of Greece, was the son of Hyrurhia, and born at Mitylene in the island of Lesbos, about the year 632 B.C. Nothing is known of his education and the early part of his life, and the first facts which his biographer, Dinogeus Laertius, mentions are, that, with the assistance of the brothers of Alcamus, he delivered his native island from the tyranny of Melanchrus (B.C. 612), and that when the Mitylenians were involved in a war with the Athenians about the pos-
session of the town of Sigeum on the Hellespont, Pithecus
won the victory over the Athenian general Pheron by a
singular stratagem. He came into the field armed with a
casting-net, a trident, and a dagger, and first entangled and
then dispatched his adversary (n.c. 606). In this war Al-
cenus left his shield a trophy to the enemy. It must have
been soon after this war that Mitylene was distracted by
the two political parties which about this time began to
appear in various parts of Greece. The aristocratic party,
to which Alcimus and his brother Antimenedes belonged,
was driven from the town, and the popular party unani-
mously elected Pithecus to the office of archon to defend
the constitution. During his administration, which lasted
from 500 to 490 B.C. he overcame his adversaries, and gained
them by his clemency and moderation. Even Alcimus,
who had assailed him in his poems with the greatest bitter-
ness, became reconciled. Pithecus regulated the affairs of
his country by the most salutary laws and institutions, and
in a.c. 580 he voluntarily resigned his office and withdrew
from public life. Valerius Maximus (vi. 5, ext. i.) errone-
ously states that Pithecus was made archon 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 Alcimus, and Diogenes Laertius. Pithecus
passed the last ten years of his life in quiet retirement, en-
joying 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 Pithecus. He died in a.c. 570,
at the age of 56.
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 Pithecus, and ad-
dressed to Cypselus, king of Lydia, which contains an answer
to an invitation of the king to come to see his magnificent
palaces. Many of the numerous maxims of practical
wisdom current among the antiotics were ascribed to Pitt-
ecus, and are preserved in the works of Diogenes Laertius,
Plutarch, Xenias, and others.
PITTOSPORA C.Z.R. are polypetalous exogenous plants with
a definite number of hypogynous stamens, a superior
ovary or two celled ovary, which in the former case has pari-
tal placenta, numerous ovals, a single style, and hard seeds.

names of Sollya and Bidillarec recall to the mind some of
the prettiest twiners of the greenhouse.

PITTS, WILLIAM. The very recent death of this
highly-gifted artist prevents our attempting a biography,
which we will do hereafter. Sollya and Bidillarec are not
merely seen to 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 to his own business, which was that of a
dealer, or what would have been termed in Italy an orifice,
branch of art now regarded as little better than a me-
chanical one, and accordingly turned over almost entirely
to his art. He had not been five years in it before he
dispersed 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 even then following his
profession on his own account. It is likely that for what in-
struction in sculpture he ever had, he was chiefly indebted to
Flaxman, for he was employed by him in chasing the
shield of Achilles, designed and modelled by himself. In-
deed these seems to have been quite similar in kind and
taste between Pitts and Flaxman, for both displayed their
Skill in poetical subjects and extensive compositions
consisting of a number of figures. As a counterpart to the
shield of Achilles, Flaxman designed the drawing-rooms of
Aneas by the other; also the shield of Hercules, from
Hesiod, and the Brunswick shield, which is a large circular
relief, representing George IV. in a car in the centre, and
in the several compartments the principal events of the
house of Hanover. Pitts was also engaged on the Wol-
Iingford 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 mentionned entirely devoted to his
art, and utterly unskilled in the art of winning his way
to popularity and fortune. Hence it is matter of regret
rather than surprise that he should not have obtained pa-
tronage at all in proportion to his ability and his genius;
or that he could only encounter many disappointments, and was lastly
involved in embarrassments. How far these last had any
share in impelling him to the fatal act by which he termin-
ated his life, it is difficult to judge. He destroyed himself by poison
in 1840.
The following is a list of his chief productions, arranged
according to their dates:—The Deluge, 1823; Samson slay-
ing the Lion; the Creation of Eve; Hero'd Cruelty, 1824;
a Charlot-race, 1826; the Pleiades; Shield of Aeneas, 1829;
the Rape of Proserpine, and the Heads of ancient bas-
reliefs, about eight feet long, executed for Mr. Simmons,
of the Regent's Park, 1829; the Brunswick Shield, 1830;
the Apostles of Spenser, Shaksper, and Milton; and another
head of the Reliefs in two of the great Heaps in 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 massivey confection, 1839;
the Triumph of Ceres, and a small subject modelled in wax,
exhibited at the Royal Academy, 1840.
Whatever difference of opinion may exist with regard
to Pitts' talents, there can only be one opinion as to his enthu-
siastic devotion to his profession, when it is known upon
good authority, that he sometimes did not his clothes off
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 publicized in the life of anxious

In addition to the works above enumerated, may be men-
tioned two of his latest performances, the 'Kemble Tribune,'
presented to C. Kemble, Esq., and a vase, executed for her
majesty, as a sponser 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]
PITT.Y.US. [TANAGRINE.]
PITIUS. [Balkaric Islands.]

PIIUS 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 authentic. Pius died in the year 157, and was succeeded by Anicetus.

PIIUS II., Benez Sylvius Piccolomini, born in 1445, at Corsignano in the state of Sienna, succeeded Calixtus III. in 1458, at the age of thirty. Pius distinguished himself in the Council of Basile, 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, 'Commentarii de gestis Basil. 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 popes, '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 right to the support of the Church and of the Pope, and after 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, and antipope, and was sent by him to his ambassador to the emperor Frederick III., who was so pleased with him, that he prevailed upon him to give up his preecious situation and accept the place of imperial secretary. Frederick afterwards sent him on several missions to the council, and nothing was decided. Pius assisted Ferdinand, king of Naples, in his war against the duke of Anjou, the pretender to that crown. At the time he was obliged to make war in his own state against Sigmund Malatesta, lord of Rimini and Pesaro, which he had found to be very offensive, 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 Basile, concluding

sunt, usque ad annum 1456, Commentarii,' At last Frederick sent Piccolomini as his ambassador to Pope Eugenius. This was a delicate errand for him who had been one of the araved 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 bestowed on him the title of chief minister of the kingdom of 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 an escape from the disgrace of his former position. In Italy, in the year 1452, he was recognised by the Fathers of the Council of Basile, who, being forsaken by both the emperor and the French king, made their 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 Sienna, and sent him as nuncio to Germany and Bohemia, where he had several conferences with the Husses, which he relates in his Epistles. (Epistola 130.) 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.

In the year 1552, Piccolomini, being then in Italy, was present at the solemn coronation of Frederick III. at Rome, and delivered an address to the pope, in which he reproved the sovereign, whom he afterwards accompanied to Naples. 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 the necessity of uniting the principal objects of his life was to form a strong bulwark to protect Italy and Germany; but at the same time he was too well acquainted with the politics of the various Christian courts, and their selfish and petty disputes, to expect any united action from the 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 Piccolomini a cardinal, and in 1459, after the death of Calixtus, 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. Machiavelli, a writer not very favourable to the court of Rome, says that 'Pius showed himself mindful above all of the welfare of Christendom, and of the honour of the Church, and he was concerned with all his own private passion or interest of his own.' (Storie Forestine, b. vi.) The year after his election he convened a congress of the ambassadors of all the Christian sovereigns to arrange the pious of a general league against the Turks. The pope himself repaired to Mantua, accompanied by the learned Philopactus, who spoke eloquently in favour of the proposed league. Most of the Italian states were willing to join in it, and especially the two powers of the Church; nothing was decided. Pius assisted Ferdinand, 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 state against Sigmund Malatesta, lord of Rimini and Pesaro, which he had found to be very offensive, 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 Basile, concluding...
with these words: 'Believe what I, an old man, now say to you, and not what I wrote when I was young'; but believing the political virtue of the private individual, reject Ἀινέας Συλλύβος, and accept Piuss II.' (Bulla Retractionum omnium Dudum per eum in Minoribus adhaec agentes pro Consilio Basileiensi et contra Eugenium summum Pontificem Scrip- torum). On this point, and especially on these points, 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 of 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 Emperor, who by the concordat had the right of deciding in cases of contested elections, refused to confirm the choice of Dietrich unless he engaged not 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 be heretical, and excommunicated and deposed him, appointing Adolph of Nassau in his place. The emperor acknowledged Adolph, but Dietrich being supported by his Tâyo, a war ensued, which, after much misch- end, ended in the submission of Dietrich. Those who remembered the sentiments of Piccolomini when imperial secretary, and especially his letter (Epistola 23) to the Papal nuncio, Savoy, concerning the council, 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 letter to Sultan Mahmud II to convince him of the errors 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 from various parts: Filippo Doria, Furr, and Charles, duke of Burgundy, 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, about the 14th of October, expired. He had been 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 in the papal chair by Pius II. II. who died of a death ravaging the native town, Corsignano, to the rank of a bishop's see, and gave it the name of Pienza, by which it is now known.

As a learned man and a writer he is best known under the name of Ἀινέας Συλλύβος, 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, went to Great Britain and as far as Scotland, and to Hungary. His biographer, Campanus, bishop of Arezzo, speaks at length of his peregrinations, and his diligence in informing himself of everything worth noting. In Antonio Pierpoint's Antiq. Alphonsi Aragonum Regis, libros quatuor, Comment. 1: 'Epitome supra Decades Flavius Blondi Fore- livensis, ab inclinatione Imperii usque ad temporas Johannis XXIII., Pont. Max.,' in 16 books; 2: 'Historia Gothica,' published by Gerhard Flug in 1709; 3: '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 pub- lished by Raphael Gobetti Tempesta in 1588, under the title Senectis De Humanae Exten- sae, 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 commentaries: 'Gera Editiones delle Opere di Pio II. fatta sotto cura di [v. do] Tristia, 1835.', Biographies of Pius II. by Platina and Campanus are annexed to the Basle edition of his works, but a much more ampler biography is found in the Commentaries published at Frankfort, 1474, under the name of John Gobetti, where the letters written by himself under his dictation: 'Pii II. Pont. Max., Commentarii Remorum Memorabilium quae Temporibus suis contiguerunt,' libr. xii., with a continuation by his intimate friend James Ammannato, cardinal, who 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 by a synod of the cardinals on the 27th of June, 1464, 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 Medicini, succeeded Paul IV. in 1566. 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 Palatino, who were accused of various crimes, which were said to be proved, and they 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, Paul IV. of Trent, which had been prorogued 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 vicerey of Naples sent his troops, assembled a syn- quisitor 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 Waldensians, who made a gallant resistance, was allowed to them 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. Pius IV., by the advice of his confessor, Philip of Fortuny, bishop of Valence, and the cardinal 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 that effect was to be. He 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 parishes.

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 his favor. Pius IV. would have been 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 pope 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 plentitude. The discussions grew warm, and it was only in the following year, 1563, that the two parties 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. during his pontificate.

PIUS V., Cardinal Michele Ghilieri, a native of Alessandria, was born at Piedmont, and was consecrated bishop of Duno in 1531. 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 clergy, by which he meant to convert the monks and nuns more than fifty thousand of whom are said to have been at that time living and stirring about Italy out of their respective convents, regardless of any of the obligations enjoined by the decrees of the Council of Trent. These reforms, which had also a monastic order in Lombardy called the *Umilitati*, 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 correct these atrocities, was shot at by one of the monks while at prayer in his oratory. The ball however only grazed the skin; the assassin was taken; the three other employed; and several preposto, or superiors of convents of the Umiltatì, were executed. Pius V., having examined the whole affair, suppressed the order, and gave their property to the Jesuits and to the City of Rome. He consecrated the College, and henceforward proceeded to the palace of the pope, which made him his great honour. The whole scene was like a renewal of the ancient Roman triumphs. Pius V. died of the stone, in May, 1572. He was austere and intolerant in his religious observations, but he was honest and disinterested, and was known to have deserted morals; he was learned, and a friend to learning, providing 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 grievous 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 hailed 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 a scholar, and of being learned in the liberal arts. 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 property of the church with prudence and economy, and with great efficacy. The choice of such a man was generally approved. One of the new pope’s first acts was to allow greater comfort and indulgence to Father Ricci, the general of the suppressed order of Jesuits, who had been confined in the castle of St. Angelo for some years, 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.

In 1777, Pius VI. had a serious dispute with Leopold I., grand duke of Tuscany, and Ricci, bishop of Pistoia, 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 emperor of Germany. Joseph had in progress a project of suppressing superfluous convents, and emancipating the clergy of his duchies from the supremacy of Rome in matters of discipline. The principal points upon which the emperor and pope were divided were: the right of the pope to audit the accounts of all convents subject to the jurisdiction of the bishops of their respective dioceses; that the bulls 'Vineam Domini' and 'Unigenitus,' and all other proceedings against the Jansenists, should no longer be in force; that the 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. expressed 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 the emperor, accompanied by some of his cardinals, to declare 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 ‘II 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 disappointment. The whole empire was agitated by having lowered the dignity of the holy see without obtaining any good result. Next came the synod of Pistoia, which was assembled by the bishop Ricci in 1766, and in which he raised several points that were much 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 convokve 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 threatened by a rising of the Catholics of the French church established by the clergy of France in 1682, Pius condemned these propositions by a bull, and suspended bishop Ricci from his functions; but Ricci, being supported by his sovereign, remained in his see. He was in reality a heretic; but he was not a heretic: he proposed to restore the ancient discipline of the church. He was a zealous Catholic in matters of dogma, and he was even remarkably strict in enforcing the laws and abstinence from meat prescribed by the Church.

Pius VI. was also busily employed in other matters besides controversies. He undertook and partly effected, through the direction of the engineer Rapini, the draining of the marshy region, containing near two hundred square miles, called the Ponzemine marshes, by which a considerable proportion of it was made cultivable. He restored the ancient Via Appia, which had become impassable, and built villages and post stations along the same. He also restored the city of Terracina, and adorned it with handsome buildings. He greatly enlarged the museum of the Vatican, which he made one of the richest in Europe in works of sculpture, vases, precious marbles, and other remains of ancient monuments; and he engraved and published the objects in this museum to be published, under the title of 'Museo Pio Clementino.' He made additions to the church of St. Peter's, and embellished Rome with new palaces and other structures.

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 thereto from other parts of Italy, many of them came to settle in the capital, the 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 Pius VI., and the architects and sculptors who adorned the scene, and rendered the latter years of Pius as glorious and calamitous as the earlier part had been bright and prosperous. In the first period of that revolution, Pius VI. solemnly condemned the absurd 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, Salimbeni, to publish, in two volumes, 'Diritto dell' Uomo' (the Rights of Man), in which the author openly condemns despotism, and asserts that a nation has the right of deposing a sovereign who abuses his authority, and he confirmed his doctrines by the authority of Thomas Aquinas, in his work 'De regimine principum' addressed to the king of Cyprus. But, unlike Paine and the other expounders of the rights of man in France, Spalding maintains that the Christian religion is the surest, the only, 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 Spalding was dedicated to Cardinal Raffo, 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. An old member of the Bavarian 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 lend him aid. A mob was collected; he rushed out of his carriage, and was dragged for some distance by the populace, it being said he was dragged 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 crime, was blamed by the French Directory as causative of the affair by a party to it. [Montpelier.] The pope then joined the league of the sovereigns against France, and strengthened his military establishment.
derogatory to his high office. Next came the commandary-general of the French army, who, after taking an inventory of all the valuables that still remained in the papal residence, ordered Pius to prepare to set out in two days. The pope said he could not oppose force, but protested against this violation of his rights. His parting words were: "Pius left the Vatican with a few attendants, and, escorted by a strong detachment of cavalry, took the road to Florence. He was lodged first in a convent at Siena, and afterwards in the Carthusian convent near Florence, where he remained till the following day. On the 10th of August he reached Tuscany 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 him to the Benedictine Convent of Arezzo. From the old pontifical was made to cross the Alps in a litter by the pass of Mount Genève, which was covered with deep snow, to Briançon. From thence he was taken to Grenoble, and afterwards to Valence on the Rhône, where he died, in August of that year (1799), in the 92nd year of his age and the 24th of his pontificate. Just before his death the Roman republic 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 bayonets, was one of unspeakable distress for the people of Rome: death, executions, suspension of commerce, and commercial war sought to be frustrated by vigilance, 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 first consul Bonaparte, at the request of his successor Pius VII., and deposited with solemn pomp in the church of St. Peter. (Botta, "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 the Jesuits, and afterwards in the university of Padua, and was appointed to the chair of philosophy and afterwards to theology, to the novices of his order, first at Parma and then at Rome. Pius VI. appointed him bishop of Tivoli, and in 1785 made him a cardinal and bishop of Imola. When Bonaparte took possession of the legations, and annexed them to the Cisalpine republic, Cardinal Chiaramonti in a homily exhorted his flock to submit to the new institutions, and to be faithful to the king. At the same time, he did not say 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 conclave being summoned to elect a new pope, he was under the dominion of Austria, as Rome was in a state of anarchy. Cardinal Chiaramonti repaired to the former city. Thirty-five cardinals assembled at Venice, in the Benedictine convent of S. Giorgio, and in great secrecy, elected a pope, a dignitary apparently not very enviable in those troubled times. The deliberations of the conclave lasted several months, and at last Cardinal Chiaramonti was chosen, on the 14th of March, 1806, and crowned pope on the 51st of the same month, under the name of Pius VII. In the following July the pope made his entrance into Rome, and soon after appointed Cardinal Consalvi his secretary of state, or prime minister. (Consult.) In the following year the peace of Lunéville, being concluded, as far as the Romans were concerned, he was a 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 'Italian Republic.' Meantime the ecclesiastical affairs of France were in a state of the greatest confusion. France was still nominally 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 Bonaparte, and were called 'sans-culottes,' or 'prêtres asservis,' or 'constitutionnels;' another was composed of those who protested against the changes that had taken place in the administration of the church since the Revolution, and were called 'émigrés,' or 'émancipés.' Each party had its bishops, who were in a state of schism towards one another. Many dioceses had no bishops, and others had but two; some of the constitutional priests were latitudinarians in principle as well as in practice; others had married, contrary to the canons of Trent; and others professed Jansenist principles. The refractory priests were generally scourged by their past sufferings, were intolerant by principle, and provoked persecution against themselves round about. It was no easy matter to distinguish of this confusion about one half of the population of France followed no mode of worship, and professed no religion whatever. A vast number of parish churches were shut up, and had been so for two years. In the month of February, 1801, he named his brother Joseph, Cretei, councillor of state, and Bernier, a Venetian priest, to treat with the pope's negotiators. At the same time Bonaparte, who was not himself much acquainted with ecclesiastical controversy, listened willingly to the advocates of the various parties, and the bishop of Blois, 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 prelacy ought to be transmuted by Roman jurisprudence. (Gregoire, "Essai Histoire sur les Liberties de l'Eglise Gallicane.") Others advised Bonaparte to proclaim unrestricted religious freedom and liberty of worship. (De Brosses, "Les Consulats," 229.) He said: 'I thought that he had in his hands the most favourable opportunity of striking off the power and influence of the Roman see, and establishing in France a reformed religion. 'A vast number of people agreed about the necessity of having one established mode of worship, and most of the last proprietors were of this opinion, not that they were religiously inclined, but because they looked upon religion as the safest guarantee of their property. They wished to see an ecclesiastical order brought into being which should take the place of the religion of France, he would have found not a few to support him.' (Jaufray, "Memoires sur les Affaires Ecclesiastiques." But Bonaparte considered that if he were to proclaim the reformed communion, he would have one half of France against it, whilst of 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 were clear: '1. They should contrive an exclusive form of religion in France, and that therefore the only thing that could be done was merely to state that the Roman Catholic was the state religion, being that of the majority of the people; 2. That there should be no more clerical requisites; 3. That with regard to the nomination and institution of the bishops, they might take the concordat of 1516 between Francis I. and Leo X. as a basis; 4. That all monastic orders should be suppressed, and that the church should remain as it was.' Above all he required the business to be promptly settled, and he wrote to Rome to that effect. The pope despatched to Paris Cardinal Consalvi, who smoothed down all difficulties, and the concordat was signed at Paris, the 16th of July, 1801, and was ratified by the pope at Rome, after some hesitation 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 concordat, which, he said, he could not consent to. Above all he required the business to be promptly settled, and he wrote to Rome to that effect. The pope despatched to Paris Cardinal Consalvi, who smoothed down all difficulties, and the concordat was signed at Paris, the 16th of July, 1801, and was ratified by the pope at Rome, after some hesitation 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 concordat, which, he said, he could not consent to. Above all he required the business to be promptly settled, and he wrote to Rome to that effect. The pope despatched to Paris Cardinal Consalvi, who smoothed down all difficulties, and the concordat was signed at Paris, the 16th of July, 1801, and was ratified by the pope at Rome, after some hesitation 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 concordat, which, he said, he could not consent to.
PIU 202' PIU

won by his unassuming yet dignified behaviour, and his un-
affected piety. In May, 1805, he returned to Rome; and his
triumph was complete. In April, 1806, the infant Pope Pius, the
troops suddenly took military possession of Ancona. Pius
renounced by a letter which he wrote to Napoleon, who
was at that time at the head of his army in Austria. It
was only after the peace of Pressburg that his mother
inquired in the letter if he considered himself as the
protector of the church against heretics and schismatics,
like his predecessors from the time of Charlemagne, and
that as such he had occupied Ancona to prevent it falling
into the hands of the Emperor. So the Pope, adopted by
Napoleon officially required the pope, through his ambas-
sador at Rome, to expel from his dominions all English,
Russian, Swedish, and Sardinian subjects, and to forbid his
people to make any treaty with France. Pius replied at length in a letter to Napoleon,
representing to him that his request was destructive of the
independence of the Papal State and of its political neutral-
ity, which were necessary to the welfare of the church and
for the security of the numerous members of it who were
living in those very countries with which the emperor was
then at war. He said that the head of the church ought
to be a minister of peace, and not to take part in a war
which had been undertaken without his request. If
some of his predecessors had not always abided by this rule, he at least
should not follow their example. Napoleon however in-
sisted, and an angry correspondence was carried on between
the pope and the Emperor. This was followed by a
conflict of several subjects of contention, the neutrality of the Papal State being all the while
merely nominal, as the French troops marching from and
to Naples crossed and recrossed 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 suddenly turned out of the main road
and surprised in the night the town of Civitavecchia, of
which they took military possession. In all these places they
Swiss guards at the
cities and heretics, yet if they were contracted in Pro-
vincial affairs according to the
way they were binding and indisoluble. (Letter of Pius VII.
PIU 202 PIU

on this important subject, in Artaud, Vie du Pape Pie VII,
Paris, 1856.) He next accused the pope of dilatoriness in
giving the opposite action to what was
sees in the kingdom of Italy. The delay was defended by the
courteous of Rome on the ground of the non-execution or min-
terpretation by the French of several articles of the concordat,
especially as to the Venetian territories, which had been
exempted to the Italian kingdom after the concordat was made,
and which the pope did not therefore include in its provi-
sions. Eugene Beauharnais, viceroy of the kingdom of Italy,
and which the pope did therefore include in its provi-
sions. Eugene Beauharnais, viceroy of the kingdom of Italy,
be 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
second half of the year, in which he said that the pope must not
take him for a Louis le DÉbionnaire; that his anathema
would never make his soldiers drop their muskets; that he,
Napoleon, if provoked too far, could separate the greater
cartels of the Empire from the Roman church, and establish a
more rational form of worship and that of 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 corre-
spond any longer with the pope, or send the bishops elect to Rome.
Torres, he was said that the pope would only unhand them when people of
sion 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
cartels and the gates, leaving however the civil authorities
under their protection. The whole was precipitated upon to send
Cardinal De Bayanle as his legate to Paris, to make a last
effort at reconciliation, but the cardinal had not arrived
at his destination when a decree of Napoleon, dated 2nd
April, 1808, directed the commissaries of Fermo, and Urbino, to the
kingdom of Italy, stating in the preamble: 1, that the temporal sovereign of Rome had
constantl)y refused to declare war against the English, and to
enter into a defensive and offensive union with Austria, for the purpose of protecting
Naples for the defense of the peninsula; 2, that the inter-
ests of those two kingdoms required a unitit trust ed com-
munication between them; 3, that the donation made by
Charlemagne to the see of Rome was imbued with the
ad

e areies to that church; 4, lastly, that the ambassador of Rome
at Paris had demanded his passport on the 30th March last,
and the diplomatic relations between the two states were at an end.

Fresh remonstrances on the part of Pius were answered
by threats of further hostile measures on the part of Napol-
eon, unless the pope entered into an offensive and defensive
league with the kingdom of Naples and Sicily, and the
Declaration that 'the pope would lose his temporal sovereignty
and remain bishop of Rome as his predecessors were during
the first eight centuries and under the reign of Charlemagne.
(Note de M. de Champagny, Ministre des affaires étrangères,
à S. Emile, Rome, 25th December, 1805.)

The war which began soon after in Spain prevented
Napoleon from occupying himself with the affairs of Rome,
which remained in a state of uncertainty amidst frequent
changes of armed and, at last, transferred to the
papal civil officers. The papal treasury, impoverished as it
was by the loss of its finest provinces, was obliged to pay
the French troops which garrisoned the towns that still
nominally belonged to the pope. All the disaffected and
the turbulent, trusting to French protection, got up a
distressed the papal government. The pope remained confined
to his palace on the Quirinal with his his Swiss guard at
the gates, not wishing to expose himself to violence by venturing
out.

On the 17th May, 1809, Napoleon, who was then making
war against Austria, issued a decree from Vienna, in which
he united the remainder of the Roman states to the French
Empire. At this time, likewise, another protest was
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 summer months made fresh attacks on the pope. He
wished to declare the marriage of his brother Jerome with
an American Protestant lady, but Pius refused, saying that although the church abhorred marriages between
Catholics and heretics, yet if they were contracted in Pro-
vincial affairs according to the
way they were binding and indisoluble. (Letter of Pius VII.
PIU 202 PIU

On the 10th June, 1809, the pope issued a bull of excom-
xuniction against all the perpetrators and abettors of the
conquest of Rome of the territories of the Holy See. The bull was directed to the governors of Rome and in other
public places. The text of the bull is given by Cardinal Paez, in his "Memorie Storiche," Ap-
pendix to the 1st part, No. 8.

The French commander, Miollis, being afraid of an
insurrection of the people of Rome, who had shown unequal-
ly signs of attachment to their sovereign, thought it
expedient to remove Pius from the capital. It is stated,
in the "Memoirs of Las Cases," that he did this without
orders from Napoleon, who was still with his army in
Austria, but that he consulted his measures with Murat,
kings of Naples, who sent him a reinforcement of Neapolitan
troops for the purpose. General Radet of the gendarmerie
was entrusted with the execution of this plan, which had a
departed his self in his palace on the Quirinal. Between two and
three o'clock in the morning of the 6th of July, some men
scaled the walls in the greatest silence, broke open several
doors, and having opened the great gates, led in their con-
rades from without. The Swiss guards made no resistance, having
orders to that effect from the pope. General Radet
penetrated to the apartment in which Pius was, and
found him in the bedchamber, where people surrounded
him. The general told him respectfully that he had orders to re-
move him from Rome unless he consented to sign an abdi-
cation of his temporal sovereignty, and on the pope saying
that he could not do that, Radet told him that he must
depart immediately. 'I then yield to force,' replied Pius;
and, taking his breviary under his arm, he accompanied the
general to the gate, where his carriage was ready, and drove up under an escort. He was taken first to Grenoble, from whence he was removed, by order of Napoleon, to Savona in the Riviera of Genoa, where he remained till he was said to have been 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 was induced to conclude the final conclusion coming to be. The great question was how to fill up the vacant sees, when the pope refused the canonical counsel. The pope at the same time would not recognise Napoleon a divorce from his first wife Josephine. In short, Napoleon found himself in this dilemma in conformance with the armies of one half of Europe. (Thibaudau, Le Consulat et l'Empire, ch. 77; Bott, Storia d'Italia, b. 25.)

The plan of Napoleon was to have the pope settled at Avignon, in Consulat, but he refused. Dr. Pius then went off to 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 restore to the pope the real State southern to the Rhine, 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 order came for the restoration of the pope and his subject and his pensionary, and to have himself the nomination not only of the bishops, but of the cardinals also, by which means he might 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 Bott, 'in this instance the independence of the church was the only remaining prop of general liberty, and if this was covered, the greater part of Europe would have been 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 obliged to make a long journey with the greatest secrecy. He arrived at Fontainebleau on the 21st of 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 professed the 'concordat' on the 22nd of January, 1814. 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. Paccia ('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 selected by a regular concordat an authority to fix their number, chief among them being those bishops elected, that no see should remain vacant longer than a twelvemonth; 2, the pope should have the nomination to ten sees of France and Italy, besides that of the six bishops, called suburban," in the neighbourhood of Rome; 3, that the bishops of the Papal State, who had been banished or suspended, obtained the suffrage of the pope, and had jurisdiction over laymen. Pius however 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 not allow 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 was condemned by the political society of Carbonari, as an utter opponent of the society under question. In the month of July, 1823, Pius, who was then eighty-four 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 26th of August, universally regretted. He was succeeded by Pius VII, who, in similar circumstances having ceded 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. [Pascal 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 retraction, except by nullifying some of the cardinals who, he thought, had influenced it. Napoleon sent off his envoy, 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 restore to the pope the real State southern to the Main, 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 order came for the restoration of the pope and his subject and his pensionary, and to have himself the nomination not only of the bishops, but of the cardinals also, by which means he might 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 Bott, 'in this instance the independence of the church was the only remaining prop of general liberty, and if this was covered, the greater part of Europe would have been 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 obliged to make a long journey with the greatest secrecy. He arrived at Fontainebleau on the 21st of 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 professed the 'concordat' on the 22nd of January, 1814. 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. Paccia ('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 selected by a regular concordat an authority to fix their number, chief among them being those bishops elected, that no see should remain vacant longer than a twelvemonth; 2, the pope should have the nomination to ten sees of France and Italy, besides that of the six bishops, called suburban," in the neighbourhood of Rome; 3, that the bishops of the Papal State, who had been banished or suspended, obtained the suffrage of the pope, and had jurisdiction over laymen. Pius however 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 not allow 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 was condemned by the political society of Carbonari, as an utter opponent of the society under question. In the month of July, 1823, Pius, who was then eighty-four 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 26th of August, universally regretted. He was succeeded by Pius VII, who, in similar circumstances having ceded 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
PIX VIII. (Cardinal Castiglioni) was elected in March, 1829, to succeed Leo XI., and died at the end of the following year. He was succeeded by Gregory XVI. Norbertine, who was immediately afterwards raised to the cardinalate. 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 PRIVATE ASSAY WAXTH 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 some security to be submitted to a trial by a jury before 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 coins are kept, and the terms in which the money is required to be placed, but particular specifications are 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. Exchq., vol. i, p. 291), took place in the ninth and tenth year of Edward I., when the king commanded, by writ, the barons of the exchequor to take with them the register of the Rokets and straightway, before they retired from the exchequor, 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 carry 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 call for a trial of the 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 the trial. In some cases 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 in such cases met, and the members of the privy council as are expressly summoned for that purpose, or the lord high-chancellor, or, in his absence, the chancellor of the exchequer, by the assent of the privy council, were the judges.

Ruding was unable to discover any very ancient ceremony by which the forms of this trial were regulated. 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, as in the form of the oath the standard 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 Conquay 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 inhabited by the exchequer 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 them to 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.

"This house was subsequently allotted to the office of deputy clerk of the pix in the Exchequer. It was inhabited by the usher in 1796, when Mr. Incredible took his Mansions. It has since been destroyed, with the other buildings of the Exchequer, and made way for the new Houses of Lords and Commons."

"When the court is formed, the clerk of the Goldsmiths' Company returns the precept, together with the list of names; the jury is called over, and twelve persons are sworn.

"The president then gives 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 some of them, in the most just manner, whether the monies were made according to the indenture 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 naturally such as accord 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. 5ozs. in each scale.

"The jury seated, the indenture, 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 indenture, and compares it with the account which lies before him. He then delivers the parcel to one of the jurors, who opens it, and examines whether its contents agree with the indenture.

"From the minutes which I took at a trial of the pix in the year 1799, it appears that it then contained—

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Guinea</td>
<td>7590</td>
<td></td>
</tr>
<tr>
<td>Half guinea</td>
<td>1085</td>
<td></td>
</tr>
</tbody>
</table>
| Thirds of guinea, or pieces of sixpences | 1873, making by tale 91d. 13d. 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 gros, one quarternode, one halfpenny, the halfpenny being by tale ten pence. They were taken from one delivery of 94lbs. 20ozs. dtwts., 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 in wooden bowls, and afterwards weighed in five parts.

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>The first weighed</td>
<td>42</td>
<td>8</td>
</tr>
<tr>
<td>The second</td>
<td>42</td>
<td>8</td>
</tr>
<tr>
<td>The third</td>
<td>42</td>
<td>8</td>
</tr>
<tr>
<td>The four</td>
<td>42</td>
<td>8</td>
</tr>
<tr>
<td>The fifth</td>
<td>20</td>
<td>6</td>
</tr>
</tbody>
</table>

190 9 8

By calculation at the rate of 46½ 14d. 6d. to the pound troy, which is the proportion required by the indenture, 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. 1dwt. 9grs.; they were therefore within the remedy by 1lb. 3ozs. 1dwt. 9grs.

The jurors took from the said monies so muddled together thirty-four guineas, fifteen 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 46½ 14d. 6d., and they were in weight exactly one pound, which in the quantity taken for that purpose, particular attention being paid that some of every sort of coin shall be selected.

The intended standard trial pieces of gold and silver, of the dates specified in the indenture, were then produced by the proper officers, and a sufficient quantity cut off from
each, and compared with the pound weight of gold coin, and the aforesaid several pieces of silver coin, by the usual marks of weight and fineness.

'Then that operation was finished, the jury returned their verdict, that the gold coins were in weight and in alloy sufficient according to the terms of the indenture; as also were the silver coins in alloy; but the quantity of them was too small to allow their agreement in weight to be ascertained.'

The trial in 1729 was an essay of the coins minted during a period of somewhat more than four years. The Gentleman's Magazine' for 1814 (vol. ii., p. 207) contains an account of the trial of the pin upon the monies coined from the 19th February, 1806, to the 28th September, 1814, of gold to the amount of 47,613lbs. weight, and of 209lbs. of silver to the amount of 6471.18s. of silver; the gold being of half-guineas and seven-shilling pieces, and the silver of four-pence, threepences, twopences, and pence. The total contained in the pin was—

<table>
<thead>
<tr>
<th></th>
<th>£</th>
<th>s.</th>
<th>d.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gold</td>
<td>1719</td>
<td>18</td>
<td>0</td>
</tr>
<tr>
<td>Silver</td>
<td>0</td>
<td>12</td>
<td>0</td>
</tr>
</tbody>
</table>

(Readings's Annals of the Coinage of Britain, new edit., 1840, vol. i., p. 69-76.)

PIZZARRO, 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. Gomara relates that Francisco was born upon the steps of a church, and in his earma, in 1511, was buried by a bishop. Vasquez de Espinosa says that he was born at Trujillo, about the year 1490. His education was so completely neglected, that he never learned to read or write, and he was employed by his father in tending hedges; but upon the death of this occupant, he ran away to Sewilla with some of 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 Córdoba to Tierra Firma, in 1529, where he distinguished himself but he did not agree that he was born at Trujillo, about the year 1490.

His education was so completely neglected, that he never learned to read or write, and he was employed by his father in tending hedges; but upon the death of this occupant, he ran away to Sewilla with some of 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 Céspedes to Tierra Firma, in 1529, where he distinguished himself but he did not agree that he was born at Trujillo, about the year 1490.

His education was so completely neglected, that he never learned to read or write, and he was employed by his father in tending hedges; but upon the death of this occupant, he ran away to Sewilla with some of 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 Céspedes to Tierra Firma, in 1529, where he distinguished himself but he did not agree that he was born at Trujillo, about the year 1490.

His education was so completely neglected, that he never learned to read or write, and he was employed by his father in tending hedges; but upon the death of this occupant, he ran away to Sewilla with some of 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 Céspedes to Tierra Firma, in 1529, where he distinguished himself but he did not agree that he was born at Trujillo, about the year 1490.

His education was so completely neglected, that he never learned to read or write, and he was employed by his father in tending hedges; but upon the death of this occupant, he ran away to Sewilla with some of 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 Céspedes to Tierra Firma, in 1529, where he distinguished himself but he did not agree that he was born at Trujillo, about the year 1490.

His education was so completely neglected, that he never learned to read or write, and he was employed by his father in tending hedges; but upon the death of this occupant, he ran away to Sewilla with some of 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 Céspedes to Tierra Firma, in 1529, where he distinguished himself but he did not agree that he was born at Trujillo, about the year 1490.

His education was so completely neglected, that he never learned to read or write, and he was employed by his father in tending hedges; but upon the death of this occupant, he ran away to Sewilla with some of 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 Céspedes to Tierra Firma, in 1529, where he distinguished himself but he did not agree that he was born at Trujillo, about the year 1490.

His education was so completely neglected, that he never learned to read or write, and he was employed by his father in tending hedges; but upon the death of this occupant, he ran away to Sewilla with some of 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 Céspedes to Tierra Firma, in 1529, where he distinguished himself but he did not agree that he was born at Trujillo, about the year 1490.

His education was so completely neglected, that he never learned to read or write, and he was employed by his father in tending hedges; but upon the death of this occupant, he ran away to Sewilla with some of 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 Céspedes to Tierra Firma, in 1529, where he distinguished himself but he did not agree that he was born at Trujillo, about the year 1490.

His education was so completely neglected, that he never learned to read or write, and he was employed by his father in tending hedges; but upon the death of this occupant, he ran away to Sewilla with some of 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 Céspedes to Tierra Firma, in 1529, where he distinguished himself but he did not agree that he was born at Trujillo, about the year 1490.

His education was so completely neglected, that he never learned to read or write, and he was employed by his father in tending hedges; but upon the death of this occupant, he ran away to Sewilla with some of 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 Céspedes to Tierra Firma, in 1529, where he distinguished himself but he did not agree that he was born at Trujillo, about the year 1490.

His education was so completely neglected, that he never learned to read or write, and he was employed by his father in tending hedges; but upon the death of this occupant, he ran away to Sewilla with some of 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 Céspedes to Tierra Firma, in 1529, where he distinguished himself but he did not agree that he was born at Trujillo, about the year 1490.

His education was so completely neglected, that he never learned to read or write, and he was employed by his father in tending hedges; but upon the death of this occupant, he ran away to Sewilla with some of 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 Céspedes to Tierra Firma, in 1529, where he distinguished himself but he did not agree that he was born at Trujillo, about the year 1490.
plunder of which city exceeded in value the ransom of Atahualpa. In 1534, Ferdinand Pizarro landed in Spain with the royal share of Atahualpa’s ransom, when Francisco’s authority was considered more secure. A large force and provisions had been appointed adelantado of 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 marched 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 Cuzco. This same year the llama was introduced from Chile, who, having defeated the Peruvians, attacked Cuzco, took prisoners Pizarro’s brothers, and subsequently Alvarado also; but certain compunctions preventing him from attacking Pizarro immediately after, the victory 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 allotments of lands, completely alienated them, and they took up arms to the revenge of Almagro, who young became the rallying point for all who were disaffected towards Pizarro. A conspiracy was formed against him, and on Sunday, June 26, 1534, the conspirators, sixteen in number, headed by Herrada, entered the governor’s palace at midday, and entering the room where the conspirators had their apartments, 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. The victory was greatly lengthened, exhausted by the long conflict, and unable to carry 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 fatigues. Though so illiterate 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 the execution of 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 sagacity, and the resolution of the politician, with the art of concealing his own purposes, and sagacity to penetrate into those of other men.’

(Vidas de Españoles Celebrados, par Don M. F. Quintana; Robertson’s Hist. of America.)

PIZZIGHTON. [HERALDRY.] PIZZO. [CALABRIA.] PLACE. L.A. [LAPLACE.] PLACENTIA (Conchology), Schumacher’s name for the Placenta of authors.

PLACENTIA, 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 area, as in nettles, and many other herbs. Morologists 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 varietal placenta and all kinds of the free central. This had led to 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 Primulaceae, Lamiaceae, and several other families. The subject has however as yet been very imperfectly investigated, and will probably be concluded connected with systematic points of great value. (Lindley’s Introduction to Botany, 3rd ed., p. 28.)

PLEINTE. [P.returnValue.

PLACENTIA. [PLACE.NZ.] PLACENTULA, Schumacher’s name for a genus of microscopic Foraminifera.

PLACITUS PAPPYRISIENSIS, SEXTUS, sometimes called by mistake Sextus Pataionius, or Sextus Empiricus, the author of a work entitled ‘De Medicinensi ex Animi- bus.’ His age is unknown, but he is supposed to have lived about the year 200 B.C. He gives the name of Placitus or Placitus as is generally called Papias; but all that is known of him is that he was a physician, as appears from various parts of his work (chap. 27, &c.). It is written in Latin, and consists of thirty-four short chapters, each of which treats of some animal that was considered to have certain medical properties in different parts of its body. It is of little or no value, as may easily be seen from the following specimens:—against a quarant fever he directs the heart of a hare to be hung on a brand and the stalks of it burned, and then rubbed over from pain in the bowels, he recommends a very young puppy to be dressed and eaten (chap. 11); for persons affected with phthisis or a bad cough, he orders the salvia of a horse to be taken, nine times with wine; the octopus he says hie, if I have myself tried it, but it is a matter of notoriety (experti- sinum est) that the horse will die” (chap. 14).

The work has been frequently published both separately and in different collections. It was first published in 1538, Norim., 4to.; in the same year, Baso, 8vo. It is 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 of the Paris Polybiblion, 1615. Ackermann’s collection entitled ‘Parabibulum Medicamen- torum Scriptores Antiqui,’ Norimb. et Altorf, 1788, 8vo. There are two German translations, one by Hensch, Basel, 1582, 8vo.; and the other by Mayr, Mag- deburg, 1611, 4to. Afterwards, in 1788, A. G. Auer, 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.

PLACOCRANCHIA, or, PLACOCRANCHITA, M. Rang’s name for a family of mollusks, forming his fifth family of Gasteropoda (Cuv.,) but placed by Cuvier among his Nudibranchiata. [Nudibranchiata, vol. xvi., p. 362.] M. Rang observes that M. de Férussac on the A. parvus, which he had noticed to him some 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 Ellyta of Risso. M. de Férussac pointed out to M. Rang that the branchiatus covered the back and upper sides 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 Gastero- poda, branchiata, which had previously contained but one genus, Placocranchia.

PLACOCRANCHIA. [Nudibranchiata, vol. xvi., p. 362; Placocranchiata.] PLACONA. [OYSTERS; Pectenida, vol. xvii., p. 363.] PLACUNANOMIA. [Pectenida, vol. xvi., p. 364.] PLACODON. (Conchology) in old edition, placed solely to the Canto-Ferno, or Plain-Song, or Plain-Chant, and signifying collateral. The Plain-Song was seldom allowed to exceed the compass of an octave, and never went beyond the fourth degree. With this the fifth was above the fourth, the mod or key was said to be Placoid. [AUTHENTIC] PLACOGIUSTOMA (Conchology). SPONDYLIZE. M. Domrul uses the term Placostoma to denote the Phærotes, Cuvier’s first family, including the Shanks (Sculpin, Linn.) and the Rays (Ratia, Linn.) of the Chondrichytes or branchiata fiscens.

PLACUS. [PESTILENCE.] PLAGIUS. [Graeca, vol. xii., p. 362.] Plagiusia is also Browne’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, 79th, 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 regulations relative to the 42nd, 72nd, and Half Highland regiments of the British infantry, it is directed that in a Highland corps serving in Europe, in North America, or at the Cape of Good Hope, each sergeant, corporal, drummer, and private soldier shall have six yards of plaid once in two years, and a purse every seven years. (James’s Military Dictionary, S. lond., 1810.) In the glossary to Jamieson’s ‘Popular Ballads,’ 8vo.
Edinb., 1806. Plaiding is interpreted ‘blanketing.’ The plaid is the shepherd’s, the author adds, in the pastoral counties of the south of Scotland are sold as a finer sort of blankets; and so are the plaid worn by the women and daughters of the peasants in many parts of the north-east of Scotland at this day.

PLAIN-CHANT. [PLAIN-SONG.] PLAIN-SONG, or Cantus Firmus (Lat.), or Canto Fermo (Italo.), 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 their worship. The Plain-Song is an extremely simple melody, if melody it may be called; it admits but one measure, the duplum, and only notes of equal value. It is rarely allowed to extend beyond the compass of an octave, and never exceeds three notes; and the staff on which the notes are placed consists of but four lines, the clefs being those of C and F. 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 that state in which it still continues to be used in the orthodox Roman church.

PLAIN SAILING. [SAILING.] PLAINS. All those 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 any 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 an indefinite meaning of itself, and seems to be rightly understood only when used in opposition to the word mountains, or when connected to the name of some known place, in which case it means the country itself so designated, or the environs of some particular city. Thus we speak of the plains of the plains, the valleys of the plains, the plains of Lombardy, the plains of Qioto, &c.

It was a great error to imagine that by the word plain a perfectly horizontal surface is always understood. In its usual acceptation 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 Venezola and the plains of the Lago Orizono, Mesopotamia, &c. But the surface of the ground may be gently undulating, as Salisbury plain, and the Ukraine; or more prominently undulating, as the plain round Paris; or it may be studded with hills, as the plains of the Cassipuire; or it may be traversed by rivers more or less distant, as the plains of Normandy and the Vexin, or by such rivers as the Rhone, which enters the plains of France between the land and the mountains, by theatives the plains of the plains, the valleys of the plains, the plains of Lombardy, the plains of Qioto, &c.

It was a great error to imagine that by the word plain a perfectly horizontal surface is always understood. In its usual acceptation 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 Venezola and the plains of the Lago Orizono, Mesopotamia, &c. But the surface of the ground may be gently undulating, as Salisbury plain, and the Ukraine; or more prominently undulating, as the plain round Paris; or it may be studded with hills, as the plains of the Cassipuire; or it may be traversed by rivers more or less distant, as the plains of Normandy and the Vexin, or by such rivers as the Rhone, which enters the plains of France between the land and the mountains, by theatives the plains of the plains, the valleys of the plains, the plains of Lombardy, the plains of Qioto, &c.

It was a great error to imagine that by the word plain a perfectly horizontal surface is always understood. In its usual acceptation 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 Venezola and the plains of the Lago Orizono, Mesopotamia, &c. But the surface of the ground may be gently undulating, as Salisbury plain, and the Ukraine; or more prominently undulating, as the plain round Paris; or it may be studded with hills, as the plains of the Cassipuire; or it may be traversed by rivers more or less distant, as the plains of Normandy and the Vexin, or by such rivers as the Rhone, which enters the plains of France between the land and the mountains, by theatives the plains of the plains, the valleys of the plains, the plains of Lombardy, the plains of Qioto, &c.

It was a great error to imagine that by the word plain a perfectly horizontal surface is always understood. In its usual acceptation 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 Venezola and the plains of the Lago Orizono, Mesopotamia, &c. But the surface of the ground may be gently undulating, as Salisbury plain, and the Ukraine; or more prominently undulating, as the plain round Paris; or it may be studded with hills, as the plains of the Cassipuire; or it may be traversed by rivers more or less distant, as the plains of Normandy and the Vexin, or by such rivers as the Rhone, which enters the plains of France between the land and the mountains, by theatives the plains of the plains, the valleys of the plains, the plains of Lombardy, the plains of Qioto, &c.

It was a great error to imagine that by the word plain a perfectly horizontal surface is always understood. In its usual acceptation 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 Venezola and the plains of the Lago Orizono, Mesopotamia, &c. But the surface of the ground may be gently undulating, as Salisbury plain, and the Ukraine; or more prominently undulating, as the plain round Paris; or it may be studded with hills, as the plains of the Cassipuire; or it may be traversed by rivers more or less distant, as the plains of Normandy and the Vexin, or by such rivers as the Rhone, which enters the plains of France between the land and the mountains, by theatives the plains of the plains, the valleys of the plains, the plains of Lombardy, the plains of Qioto, &c.

It was a great error to imagine that by the word plain a perfectly horizontal surface is always understood. In its usual acceptation 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 Venezola and the plains of the Lago Orizono, Mesopotamia, &c. But the surface of the ground may be gently undulating, as Salisbury plain, and the Ukraine; or more prominently undulating, as the plain round Paris; or it may be studded with hills, as the plains of the Cassipuire; or it may be traversed by rivers more or less distant, as the plains of Normandy and the Vexin, or by such rivers as the Rhone, which enters the plains of France between the land and the mountains, by theatives the plains of the plains, the valleys of the plains, the plains of Lombardy, the plains of Qioto, &c.
The greater part of what 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 they derive, partly in doubt, 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 steppes, prairies, grasslands, pastures, sahel, pampas, and selvas (or forest plains) of the Marácon. Deserts having been already described under their particular head, we shall here give a brief account of the others.

Plains of Europe.—From Paris to Moscow and Casan on the one hand, and Astrakhan on the other, is one continuous 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 its plains with cultivation and rendered some of the 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 Ural and the Caspian Sea, and especially the steppes, where the grasses are of a nature to prevent the growth of trees. Among these the most extensive are in Lapland and West Gothland. But the chief steppes, properly so called, lie in the north-eastern part of the plains of Germany. In Lower Silesia, Lusatia, and Brandenburg, there is little else than sand, and also in Pomerania and Mecklenburg, studded with a few hills, numerous lakes, and, along the margin, parts of the brier, having some woods of oak. In Hanover the gentle acclivities are covered with heath, which extends through part of Holstein to the centre of Jutland. The most sterile parts of Hanover however are the lands of Lüneburg and Verden between the lower Elbe river, and those of the bank of the Emms. Those of Lüneburg and its vicinity are said to cover a space of about 6000 square miles. These lands are covered with heath, with pine woods, and marshes. On the west of the Emms, about Bentheim, there are also extensive lands covered with swamps and stagnant pools.

In the province of the Lower Rhine, in the environs of Monjou, between Eupen and Malmedy, we again find vast heathlands of oak and heath. In France, of which country about one-twelfth is unproductive soil, there are extensive heaths and barren spots. That tract which extends eastward from the right bank of the Adour, and gives its name to the department, consists almost wholly of heaths, marshes, and heath-covered woods. This plain exhibits in that way into the department of the Gironde. The shingle plain of Cram, in the department of the Bouches du Rhône (Bouches du Rhône), is very well known, and likewise the sterile chalky plain of La Champagne Pouilleuse. In the kingdom of Naples there are considerable plains.

Steppes.—This name, which is Russian, is given more particularly to the extensive plains which lie on the northwest of Asia. Considered as a whole, the steppes have a character quite different from the other great plains of the world, though in different parts they present partially the distinguishing features which characterise the llanos, the savannas, the pampas, the sandy deserts, &c. Generally they consist of rich pastures interspersed with woods, barren sands, muriaticiferous clay, and abounding in lakes, pools, and streams of salt and bitter waters.

From the seas of Azof to the west on the foot of the Little Alai on the east, there is a band extending, in a north-east direction, from the mouth of the Kuban towards Torsuk, where the undulations of the plain prevent the egress of the waters, which, percolating through a highly saline soil, are conveyed into hollows into innumerable lakes and pools of salt water, which give a peculiar feature and interest to these steppes.

Further northward, the Siberian plains have a general slope towards the Frozen Ocean, and are intersected by the great rivers Obi, Yenisei, and Lena. The sum of the rivers of these regions consist of courses which extend immense frozen marshes, covered with moss, and interspersed with a few sandy and clayey hills crowned with tufts or clumps of stunted birch and other dwarf shrubs.

Previous to the nominal subjection of the wandering hordes to Russia, that country had lines of fortified posts for its protection against these predatory bands; but now that these different hordes of Kirghis acknowledge the supremacy of Russia, their several cities and the Russian government, many of these posts have been abandoned, and open villages are now multiplying along the roads by which the Russian caravans travel towards Khaitcha and in the environs of which are the walled towns of the Kirghis. Among these villages, some of which are very large, are the only stationary population of the steppes. The wandering tribes are very numerous, and are continually shifting their ground to find food for their numerous cattle, consisting of
horses, camels, horned cattle, sheep, and goats. These herds, together with the boats taken in their incursions upon the Calmucks and others, form the sole wealth of the Kirghis, who lead easy and independent lives. The climate is so dry and the terrains so low, excluding the marshy plains of the north, may be about 1,600,000 square miles.

Savannas or Prairies.—The central part of North America, from the Frozen Ocean to the Gulf of Mexico, may be regarded as a series of prairies, that extend into the northeastern 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 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; while the northern portion, which is watered 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; and it is this basin of the Mississippi, 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 zone of prairies. Prairies exist for it is rises towards the mountains, many of whose spurs are reached by the Missouri, which has eroded their extremities into bluffs. These ridges form the boundaries of the basins of the great tributary streams, the Platte, the Kansas, the Osage, the Arkansas, &c. 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, there are extensive flat swamps, 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 intermixed with pools, with abundance of trees: this is also the case above Illinois lake and elsewhere. Along the upper Mississippi, from the territory of the Mandan, 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, 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 prairie of the northern extremity, watered by small shrubs, grape-vines, &c., very common in Indiana, Illinois, and Missouri; 2. Dry or rolling, generally destitute of water and almost of all vegetation but grass; they are the most common and extensive, the country still wandering for days in these vast and nearly level plains without wood or water, and see no 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, stags are most numerous near the borders of the Arkansas and Red rivers, there are herds of wild horses. Deer are also numerous; and along the borders of the Missouri, above the Platte, or shallow river, the antelope abounds in herds of several hundreds. In summer, the gazelles 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 immense country are added the plains of Ohio and Indiana, and the Great Lakes, which are also inhabited by the greatest number of Indians.

Llanos.—The whole interior of South America, from the mountains of Caracas on the north to the Straits of Malagunias 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 on the 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 divided into two parts: the first, beginning at the mouth of the Orinoco, extends westward far as the Andes of New Granada, being bounded on the north by the Caracas, and on the south by the mountainous group of Parima and the Rio Apyre, an affluent of the lower Orinoco. The other group of the llanos, which is twice as extensive as the first, reaches from the Apyre on the north to the Caqueta (an affluent of the Marañon) on the south; having the Andes on the west, and the Sierra of Parima and the Orinoco on the east. The inclination of the plains is toward 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 200 square miles there is not an eminence of a foot high. This resemblance to the surface of the sea strikes the imagination most powerfully where 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 unvarying equality of surface reigns without interruption from the mouths of the Orinoco to the Villa de Aurore and Oapion, under a parallel of 546 miles in length, and from San Francisco to the Caqueta, under a parallel of 877 miles.

There are however, notwithstanding this uniformity of surface, two kinds of inequalities in the llanos. The first, called bracones, are horizontal banks of sandstone or limestone standing four or five feet higher than the rest of the plain, and sometimes many leagues in length. The second kind of inequality, called mesas, consists of convex eminences rising to the height of a few fathoms.

The llanos have no permanent parts; thus, from the Mouth of the Dragon, the llanos of Cumaná, 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° 30', we find the llanos of Varinas, Cassuare, the Meta, Guaviaro, Caguan, and Caqueta.

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 climate varies as the climate of the palm-trees scattered about, which vary in different places, and also from the greater or less abundance and variety of the dioxytelenous plants which are intermixed with the grasses. The climate is 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, is said 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 serpents are barmen, they live on the lizards and other species 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. Of these the Palma de Cobija, solitary or in clumps, rises here and there as a landmark through these trackless plains. It is chiefly found in the llanos of Caracas from Mesa de Peja, as far as Guayaval, farther north and north-west, near the Montes de Mariana and Sierra de la Laja. It is a species of the same genus. Other palm-trees appear to the south of Guayaval, especially the Pityro, with pineate leaves, and the Murtich, whose beautiful verdure, at the period of the greatest drought, contrasts with the black, white, grey and dusty leaves of the cobija. 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.

Vol. XVIII—3 E
The great wealth of the llanos consists in the numerous herds which they feed. The first horned cattle were let loose on these extensive pastures by Christoval Rodrigues, about the year 1549, since which time they have increased to almost countless numbers. About 98,000 head of cattle are seen on the pastures of this region. 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 Price of cattle is so cheap that the people are said to mark them 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 capitanía-general amounted annually to 4,000,000, of which the Isla de la Plata, 1,784,900 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 underrated.

All the parts of the llanos are not equally favorable for the breeding of mules and oxen; but in some of those places, where the herds are less numerous, the pastures are so fertile as to furnish most of an excellent quality for provisions to men.

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 Salinas of the testudo 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 lie to the south and north-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 Chiquitos bear the name of the Pampas de Huamancos. There is also 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 Ucayali there is another, called the Pampas del Sacramento. 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, the interior of which is little known; and on the north-east by the Rio de la Plata. In the direction due north the pampas narrow between the Parana and a ridge coming from the Andes, called the Sierra de la Plata.

This region, reaching to the foot of the mountains on the west, occupies a surface of about 35,000 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 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 patches of saline plants and stunted 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 of head of cattle and about half as many horses feed on the Pampas of Buenos Ayres. There are also wild beasts.

This plain is traversed by a road which leads from Buenos Ayres, passing through the plains, which contain two large towns, with human habitations, from which stations, distant from each other about seven or eight leagues. The journey may be made on horseback or in a carriage, but 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 trerras of Santiago del Henepo and Calabahora. 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, which flows into the Paraguay, or Parana, and empties itself into the Lagunas de las Porongos; the same is also the case with the Rio Primero, on which is situated Cordova, the heat 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, there, as everywhere, is neither river, lake, nor stream, except the Paraguay, and the river Marmore is not brackish. Even the Pilcomayo and the Vernejo partake of this saltness; and the same author assures us that he has seen in lagunas, dried up by the heat, a layer of Epson salt of the thickness of three inches.

The inhabitants of the fertile valleys lying to the west and north of the plains of Tucuman, similar in some respects to Little Bucharia, rich in their flocks, without ambition, and without care, close the day in rural amusements worthy of being sung by Theocritus and Virgil. 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 saltpine plants, without meeting with any other objects than a few isolated huts on the borders of some brackish stream; these barren districts are generally designated by the term treresa.

Pampa de Huamancos.—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 Cibones, a race of very warlike Indians; after which we enter the Rio Vermejo, where 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 Po- rico, falls into the Paraguay, below the City of Assumption. To the north lies the Pampa de Huamancos, 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 north by the forest the plains of Oxos and the sandy plateau called Campos Paraxis.

Pampa de Oxos is on the north of the province of Oxos, between the rivers Beni and Marmore; and between the junction of this latter and the Guaporé, 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 saline. It occupies a surface of from 24,000 to 65,000 square miles.

Such are the principal pampas of South America; and, if we include a part of Patagonia as being of the same nature with the others, we shall have, without reckoning the pampas of Oxos and Sacramento, and a number of spots of similar character but less extent, an almost uninterrupted band, extending from the Campos Paraxis, in latitude 15° S., to the bay of St. George in 45° S., or about 1200 geographical miles long and 300 wide, or a surface of 840,000 square miles of plain, partly sandy, and partly marshy and saline, and producing hardly anything but pasture and a few stunted trees. Humboldt estimates the whole of the pampas of the Rio de la Plata and Patagonia at 135,000 square leagues of 29 to the degree.

The Selvas, or forest-covered plain of the Marafon.—Independent of the vast forests which cover great part of the eastern plains of this continent, there is in the state of Mississippi, there is the immense plain of the Marafon in South America, extending over a surface of 2,340,000 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 region as being 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 have the same influence. The large part of them in their turn must exercise over the climate of the regions contiguous to them, and the great modifications they must effect on the astral temperature. Indeed the curves of the isothermal lines sufficiently prove that the several climates of the earth are not independent of each other, but that the action of the sun, reflected to various degrees by the great bodies of water by which they are surrounded. Nor have the vast 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 sections. The map is not properly a plan, but a Projection, unless the horizontal section is of a higher order of complexity: nevertheless the term is commonly applied, to maps of very small portions of a country, as an estate or a town.

PLANARIA, Captain Brown's name for a genus of fossil shells, with a single surprise, the ammonite. Saturnalia, another ammonite, but the outer lip is reflected; and the form is considered to have been marine. Mr. Lea notes a new species, Planaria miensae, from the Claiborne beds, Alabama. (Contributions to Geology.) Planaria had been used by Müller, Lamark, and others, to designate a genus of animals placed by Cuvier among his Intestinae Parentemutusae, 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.

PLANAXIS. [Entomotomata, vol. IX, p. 453.]

PLANE. [Straight Line and Plane.]

PLANE, INCLINED. [Inclined Plane.]

PLANE. Botanists enumerate several species of this tree, of which two only deserve notice here.

The Oriental Plane, or Chimar, is a native of Asia Minor and Persia, and is the plainest tree of the sort. It stretches easily and fast as far as Cashmere. Its favourite spots are low situations, where the soil is rich and humid: as it ascends the sides of mountains it soon becomes scrubby, and degenerates into a woods, the (to rest) expected. One of the most noble of all trees, with deeply divided leaves, glossy and bright green, and huge branches which spread in all directions from its massive trunk, forming in eastern countries the most agreeable of all shade. It appears to acquire a very great age, was extensively employed by both the Greeks and Romans for avenues and other purposes of ornament, and is to the present day the handsomest of all the hardy deciduous trees in cultivation. It is also perfectly suited to the climate of England, suffering nothing from our winters or inclement and variable springs. Nevertheless by some strange inadvertence it is rarely seen with us in comparison with the next species, which is in all respects inferior. Its timber is fine grained, hard, and well suited to such buildings as are undertaken for their strength alone, for which its brittleness renders it ill suited. When the wood is very old it is said to acquire dark veins, and to assume the appearance of walnut.

The American 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 .

Hyde Park, and in other public places near London, and it 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 occurring frost; the consequence of which is that the trees grow slowly, and when grown large, by appearance, few of their leaves being free from brown and dead portions, unless in very favourable seasons. The production of it ought therefore to be stopped, and that of the Oriental Plane substituted, if the latter could be induced by 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 properties of throwing off their old bark in hard plates of irregular size and form.

PLANE. [Mississippi River.]

PLANET (αστήρ πανάστηρος, a wandering star). PLANETARY THEORY, MOTIONS, PERTURBATIONS, INEQUALITY, &c. The term planet was first applied as one of 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, as they are called—all 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 found to have a planetary motion of one sort or another. The mathematical and physical consideration of this question is a matter of history, must be looked for under Astronomy. It is impossible to separate the history of one part of astronomy from that of another: the fixed stars, on which all celestial measurements depend, must accompany the planets in every account of the latter; 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.

The term planet, so 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) expected to explain a part of the most noble of all the suppositions which must be superadded to that of the simple circular motion round the sun, in order to enable the astronomer to predict the planet's place at any given future time. At present, by the theory of a planet is meant 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 almost rival observation itself in the accuracy with which 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 should have been deduced from the theory of gravitation have been deduced from observation, the tables are then partly empirical. For the treatment of the theory of gravitation as a question of physics, see ATTRACTION: for the deduction of the planetary 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 secular inequalities of the planetary motions, see Solar System. See also the general considerations under the word Theory.

The Planetary Theory, it must be remembered, in the sense in which those words are now understood, applies 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. To forecast their courses, as being themselves revolving about the sun, cause the apparent planitary motions to vary most materially from the real ones, and the geocentric places (or places as seen from the earth) to differ literally from each other. A planet moves very little from east to west, 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 populace, incomparably different from those which 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, a planet moves about the sun. The man who first conceived this notion, and drew the Ant-lion shows a quantity of sand upon the victim by means of his head and mandibles, and thus succeeds in overwhelming it and bringing it within reach of its mandibles. Having sucked the juice, the larva in the course of time, the remains are thrust out of the domicile. When about to pass to the pupa 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 wings of the male are transparent, and have black nervures with white; some dusky spots and one whitish spot are observable near their extremity.

The third family consists of the Hemerobides, which are chiefly distinguished from the last group by their filiform antennae; they moreover differ in having only four palpi. In some (the genus Hemerobius), the wings when closed meet at an angle, as in the Myrmeleons, whilst in others (Semblis) they are horizontal. Hemerobius perla is common in our gardens, and is often seen flying about the lilacs, especially towards the evening. It is rather more than half an inch in length, of a green colour, with numerous green nervures; its eyes resemble small globes of gold; when touched, it emits a very disagreeable odour.

To the fourth family Latreille applies the name Termi- nes; it includes those Neuropterous insects which have a semi-circular abdomen and larval habits, with four palpi; they are carnivorous, and are either carnivorous or gnawers in all their states. Latreille, which Latreille places in this division, is the only one of them which bears a strong resemblance to the Mandibulata; they have never more than four joints; the mandibles are strong, and the wings have no folds; the inferior pair is either smaller or equal to the superior wings in size.

Besides the Mantispidae this family includes Raphi- dina, Termes, and Pocosc. The last family of the Planipennia is the Perididae, 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 larvae of the Perla live 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 disappeared, but it is still in use for the portion of the hemisphere which is to be seen from a specified place (the 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 which 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 part being cut out. This one of course is seen on top, and to which the polar axis is coördinate with the axis 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 polar axis to the north, and the second disk to the east, and hour is distinctly shown. The time at which any star rises, culminates, and sets can be immediately found within a few minutes. The planisphere strongly recommends this instrument to those who study the face of the heavens, as being much superior to the globe.

PLANORBIS. [LINNÆUS, vol. xii., p. 496.] PLANORBULINA, M. D'Orbigny's name for a genus

* These planispheres are very well manufactured by Messrs. Smith and Smith, 127, Cheapside. We mention this, because some of which we have seen are very erroneous: we remember one in which the equator cuts the horizon a great way from the east and west points.
of microscopic Foraminifera. [FORAMINIFERA, vol. x., p. 348.]

PLANTAGENET. [HENRY L. II.]

PLANTAGINACEAE are small natural orders 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 Ribgras, or Plantago lanceolata, may be taken as the type, and are of no material importance to man. The mucilage surrounding the seeds of some 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.

1. Plantago major. 2. a flower; 3. a corolla cut open; 3. a seed-vessel, with the upper half of the pyxis removed.

PLANT/GRADA. [CARNIVORA, vol. vi., p. 307.] The genera placed by Cuvier in this tribe are Ursus [Bear], Procyon (Racoon), Atelurus [Panda], the Benurongs (Lacets, Valiens.), the Coati (Nasua, Stott). (Here he thinks, can hardly be placed the Kinkajou, or Potos, Cav. (Cercopithecus, Iii.), which join to plantigrade motion a long and prehensile tail, like that of the Sapajous, a short muzzle, a slender and extensible tongue, two pointed molar teeth in front, and three tubercular molars backwards.) Meles, Stott [Badger]; Meles, Guloo, Stott [Gulo], and the Ratela (Fiviera melicoruma, Sparow.; Fin. Capensia, Schreb.), which have one false molar less in each jaw than the Griezon, 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 Griezon and the Badger: the legs being low, and the feet plantigrade, with five toes on each foot, armed with very strong claws, &c. (Râgne Animal.)

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 epidermis, 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 already 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 special parts of a plant, the same successful result 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, and the depth of this trench should 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 the fork is not by any means to be thrust down so hard as when 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, and if necessary, 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 lacertated 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 nursery 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 found advisable in various cases to shorten not only the tap-root, as above mentioned, but also judiciously some of the other strong roots, in order that subdivisions of a more fibrous nature may be produced, and a number of rootlets 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 thus a sufficient number of undisturbed roots to keep it alive; and in fact it ought not to be merely kept 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 there has been performed a number of young trees have been protruded from the various ramifications 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 means as the above, and if carefully 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 all care should be taken to make them in such a condition with the least possible delay; or at all events, if circumstances render delay unavoidable, such means should be resorted to as will bring them in a state as near as possible 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 extraordinary cases - and not of the ordinary case in plants or in artificial means - 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 saturated state. The source 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 great, as it is in the case of moist woods, the plant will begin to suffer; if the disparity be great and continued, a degree of desiccation will be occasioned sufficient to deprive the vegetative tissue of that moisture which constitutes the medium of communication 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 liriope may have a surface equal to thirty times that of a branch they may cover; the roots of them, 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 given where this difference may be excessive, but if, on the contrary, it was found considerably less, still there would be sufficient evidence of the improbability of moving plants when in leaf: and it may be here remarked, that young leaves admit of the fluids being more rapidly evacuated than mature ones.

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 to the colder. In the month of December 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 not the lowest, 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 the cause of the appearance of dryness, it is not the cause of the formation of wool, except in the most limited degree, yet the balsam, whilst they are themselves increased in volume, maintain a corresponding action in the roots, sufficient to form fresh water, a process 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 spongioles, 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, the case of very late varieties. Some species if not firmly rooted, are liable to be blown 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 rapid progress. Some species of 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 injured by exposure 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 insinuated 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-plants, or Seaweed. The supply of water should be gradually diminished; consideration should always be had to the nature of the plant, to which, if it delight in dry soils, no more water should be artificially supplied than is necessary to moisten the ground around it, and this should be done in the natural way, 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 on resuming should 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 must be extremely weak under such circumstances; but if it can be preserved from the effects of drought till it reach the extremities of the roots, the formation of fresh spongioles will immediately commence, and the tree may then be pronounced out of danger.

The months of July and August, in which the evaporation 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. This position may be 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 and do accommodate themselves to such a position, from 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 the surface of the soil, or, if there be no satisfactory evidence, except of those minute descriptions, that they will be readily 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, as not to stand above the surface, the latter should be covered with the remaining portion of soil. Except in very loose or light soils, this method will supercede the necessity of the hard beating and treading in to which the roots of trees are subjected; a very general practice, where the plant is not 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 the 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 after this manner; and when they are left, however imperfectly interlaced, they are certain to be dried out 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
of large as well as small trees, and in fact to any terrestrial species of plant. There are however many modifications in practice which must be observed under certain circumstances, and others as only to be condemned under any circumstances whatever.

Small plants are very frequently inserted by the dibber, a cylindrical stick, with the end slightly concave at the point. This is thrust into the soil, and in the hole formed by this means the roots of the plant are introduced, and a portion of soil pressed towards them by a second stroke of the dibber. It is evident however that by this procedure the roots which may have been in natural position; they may in fact the very reverse of being spread out to the best advantage.

In the case of very valuable species, the spade or planting-trowel is used in preference to the dibber. The latter has nothing to recommend it on the score of good principles in planting; the expedition with which it can be employed is all that can be said in its favour.

Besides the spade and dibber, various other implements are used in planting, such as the diamond dibber, a pointed stick with a short iron handle; a mailtool, used in stony soils; and some others, adopted according to circumstances. In all cases however where the spade can be used, it is undoubtedly the best instrument. If the soil be unfit for all these, the dibber is superior; they grow liked wise; 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 remain to be ultimately in favour of a proper disposition of the roots.

With regard to the preparation of the soil for plantations, it is found that trenching the ground is attended with profit where it is practised for the purpose of rearing wood for fuel and the soil of war. It is found that a trench which is necessary to be adopted where trees are intended to be planted for ornament or for shelter. It has not been generally attempted in the case of extensive plantations of heath or rugged mountain land. It may however be attempted without the objection that great advantages would be derived from the operation being more extensively performed. Something more than merely burying the roots of hard-wooded plants is thought necessary, and accordingly pits are made. It is seen necessary to observe that if these are not of considerable size, the direct progress of the roots is soon obstructed. The time required to form these pits as they ought to be, would be sufficient to regularly trench double their area. The expense of trenching the intermediate spaces will be compensated by the greater return derived from the nurse plants, such as larch, when they come to be removed.

Plantations are generally planted thick in the first instance, with the species of trees. Larch, Scotch fir or pine, mountain ash, &c. are interspersed amongst the hard wood for shelter, or as nurses. Laburnum is also useful for preserving the other sorts from the depredations of animals. In early spring the young shoots are cut, and the Nurses are generally left till they are fit for various purposes for which small timber is applicable. They should be planted closer to each other than to the principal trees intended to constitute the more permanent part of the plantation.

After all the care of the planter and the skill with which the operation of removal may have been effected, much of the success of a plantation depends on the proper adaptation of species to the soils and situations most suitable to them.

The following remarks upon some of the timber-trees principally cultivated may be useful.

The oak, Quercus robur, and Q. sessiliflora, prefers strong or even clayey soil; any soil not wet or clayey. Elm, Ulmus campestris, U. glabra, U. montana, attains, near the banks of rivers, a large size; thrives in most soils. Ash, Fraxinus excelsior, affects a dry subsoil; dislikes a stiff clay.

Plane, Platanus orientalis, rich warm soil, tolerably moist, but not retentive. Sycamore, Acer Pseud-Platanus, A. platanoides, best in moderate soil, but will thrive in others not too stiff; with--stands the sea-breeze.

Chestnut, Castanea vesca, deep sandy loam.

Walnut, Juglans regia, deep loam with a pervious subsoil; dislikes strong clays.

Hickory, Carya alba, similar soil to that required by the preceding.

Acacia, or locust-tree, 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.

White Beam, Pyrus Arbo, 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. fastigiata, P. Greeca, P. monilifera. These thrive in almost any soil, but best in that which is deep and rather moist.

Mountain-ASH, Pyrus Ascoparia, 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 soil. P. Laricio grows well on the borders 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, grows well in deep, moist soil, in low situations; dislikes thin sandy soil and exposure.

Larch, Abies Laricio, adapted for thin mountain land, or any soil of which the subsoil is not retentive, excepting however 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, 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 ancient forests that have never been sown, planted, or anyhow 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. But the fate of nature must be irreversible to such a degree as to those which maintained their ground, and, favoured by propitious soil, became lofty specimens, 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 planting 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, thinning, and pruning. De- creases 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 fenced; but in that case, the species of trees and shrubs properly chosen, 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 undisturbed. Plantations that have been 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
for want of the knowledge of a few physiological facts, which are essentially necessary before any rule can be
for growing canes properly given. If these facts be un-
understood, few rules will be required, but otherwise a volume
of directions are liable to be misapplied. It ought therefore
to be understood, that the sap, or the inner part of the stem, is
thereby the bark, the outer layers 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 thread of the lamina, the intercellular surface of the leaf,
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 detemined and becomes organised, by the action of
the medulla, in forming the interfascial wood of the stem. The
laxness of the layer so formed is very different in dif-
ferent species; but in the same species, all other circum-
stances being the same, it is in proportion to the surface
of leaves. The aggregate horizontal growth, or in other
words the diametrical extension of the stem, branch, and even
root, depends upon the quantity of healthy foliage. The
diamentrical increase of any particular part corresponds with
the greater or less proportion of foliage above that part.
A little reflection may state 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 a steady, and constant one on the trunk will
durabilize the surface in the tall tree. It may be also remarked,
that, in general, if a tree be left 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. Except in the case of growing for fuel,
pruning is more or less necessary. The value of a timber
branch depends chiefly on the stem, the branch timber being
of less value. The object to be kept in view in pruning for
timber is, to produce a clean stem with as small a pro-
portion of branches as possible. It has been explained that
the growth of the stem depends on the quantity of fo-
lage, and without branches a sufficient quantity of foliage
cannot be maintained. Thus the pruning of branches is
anticipated by pruning, yet, on the other, as much foliage should be preserved as circum-
cstances will permit.
An excessive privation of foliage should never be
occasioned at any one time. It is therefore advisable that prune-
ning should be commenced early, in order, as it were, to re-
press irregularities in the bud. At all events, whenever an
irregularity can be clearly distinguished as such, it should be
bent down, or when a shoot, or a branch, ascends in competition with 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 ampu-
tated after it has acquired a large size, the timber will be
reduced in value. If the main stem of the limb took its rise had been stopped in the first or second season
of its growth in summer, the tree might have been grown
with a clean regularly tapering stem. It is only great irre-
gularity however that should be modified with during the
early growth of the plant; otherwise the increase of roots is prevented, such increase being reciprocal with that of the
branches.
Young shoots of the above description may be checked by
being shortened in summer; but no large branches should be
be cut off at that season, nor after the sap begins to flow briskly
in spring. Towards autumn however, when the leaves have
nearly ceased to carry on their functions, pruning may be
very properly performed; and some species, for example
the birch and maple, require to be pruned at that time, otherwise they are apt to bleed. The period at which bleed-
ing, that is, an extravasation of sap, takes place with greatest
facility, is when the shoots appear to be beginning the
spring. If a branch be cut off when in foliage, the remain-
ing portion draws the sap and prevents effusion at the
wound. Some derangement will of course be produced in the
absence of the diminished light, and the formation of ligni-
ation and of the formation of roots will be occasioned, owing
to the abstraction of a certain extent of foliage. But when
the sap is in motion, and the leaves at the same time not
expanded, the amputation of a branch is followed by a flow
of sap, which appears to draw from every part of the tree.
This sap becomes stale on exposure to the air; it then af-
facts the cambium and inner bark, often to a considerable
extent below the wound, and if these are not in all cases so
cleanly cut as to be generally more or less injured, and canker is apt to ensue.
Supposing it were required to rear a tree so as to have
a stem of clean-grown timber, as tall and as thick as could
be desired, the planent being of the coniferous kind, the first
consideration is the root, the plant being supposed to be young,
with a top or upright leading shoot, and several side
branches. All these should be left undisturbed in the first
instance, unless such of the lateral ones as require a check
in growing too strong for the bearer or for the leader. The
latter should be left, for the sake of the roots, till their
presence on the stem becomes inconsistent with the object
of producing it as free as possible from knots, taking
off the terminal shoots in the first season, and reducing the
wound as the branches get older. A few of the largest shoots should be those first removed. They
may be shortened in the first instance after midsommer,
and afterwards cut off smoothly by the low curved
wrenches which form round their base, close to the stem,
but without aching of a portion of the bark; a slovenly
practice, of which only bad pruners are guilty, and which
can only have the effect of diminishing the power of the
bark to recover. It is a waste of time and labour to rely
on knives. Such unnecessary wounds cause an extrava-
sation of sap, as may be seen especially in coniferous trees,
where they are generally covered with resinous exudations.
Such a wound may be left in the tree, and if it is removed
in like manner displaced, care being still taken, on account
of the importance of the foliage, as already explained, that
the quantity removed shall be no more than is absolutely
necessary.
Small branches along the stem should be left till they
approach the dimensions by which the removal of the others
is regulated. These principles should be followed up till
the required height of stem is attained; after which the
branches composing the stem should be thinned out, in
order to increase, by their organising power, the diameter
of the stem.
Coniferous trees require little pruning; nor is it necessary
to make a distinction between them as it is done with decid-
uous kinds. In dense forests they are found with straight stems
approaching the height of 100 feet clear of side branches,
the latter gradually decaying below as they become ex-
cluded from light and moisture by those above them.
When from this cause the lower branches of coniferous
trees are observed to lose in a great measure their vigour,
and when their foliage contributes little to the enlargement
of the stem, they may then be very properly cut off, with-
out harm to the tree. This may be done at any period
of the year; but 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 to remain or be afterwards cut close to the
stem. Pruning to this extent is best to allow any portion of
resinous abscission to occur, 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 shorten-
ing, large limbs of any healthy tree may be closely ampu-
tated 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, on cutting up the timber, be only in close con-
tact with the surface of the wound, which will remain dead,
and in winter it will be at the best, in a state of drought.
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 tree is spliced; if the branches are to be
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
stimulation of growth. The powers of which are evident even on the strong fibre of the
PLA

PLA

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 the subject of the durability of oak, I must observe that there is a great evil, which is of so much consequence to the public as to deserve their utmost attention; which is, that of cutting down the oaks in the spring of the year, at the time the sap is flowing. This is done for the sake of the bark, which will then easily peel off; and for the sake of this, I think there is a law, 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 cut in the winter, so that those who shun the labor of getting the collection of the bark, and know it to decay 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 in seven years, evidently proved that the branches 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 this is found to be more durable and better for use than that which is cut in the spring.' These remarks, which we had a wish we were wise enough to copy after them in those things that are for public good.

It may be observed, that at the time Miller wrote, the cause of cutting oaks in the spring, was the decay of red, or so called, general marine, in 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 unobjectionable, as on some account of the electricity in honor to falling in autumn or very early in winter without previous disbarking.

(Sang's Planter's Calendar: Loudon's Arboresum Britannicum: A cyclopaedia of Gardening: Planudes, 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 attending his life is, that in the year 1327 he was sent on an embassy to Venice by the emperor Andronicus the elder. At this time he must have been of a mature age. That he was still alive in 1340 is evident from a letter still extant, which he wrote to the emperor John Palaeologus, who ascended the throne in that year. D'Orville places his death in the year 1353, for which however he adds no testimony. Gerhard Vossius prolongs his life to the year 1370; and others still later. Towards the conclusion of his life it is said to have been imprisoned on account of his partiality for the doctrines of the church of Rome; and when afterwards compelled to write against that church, to have done so in such a manner and with such firmness that the Cardinal Besangon declared that he feared the Frenchees had no share in what he had written on that occasion.

We are indebted to Planudes for the preservation of a number of valuable Greek poems. He made a collection of Greek epigrams and other verses from the comprehensive Anthology, in fifteen books, which Constantine Cephalas had compiled in the tenth century. Planudes, in his collection, omitted those poems which seemed to him obscure or of little importance. The compiler had displayed little taste or discernment, was, at the time of the revival of letters in Italy, the only one which was known, and was first printed, in 1494, at Florence, by John Lascaris. This edition was reprinted at Venice in 1518, and at Genoa in 1522. A later edition, and with some additional poems, was published by H. Stephanus, at Paris, in 1566, which was likewise reprinted several times. It has been translated into Latin by Grotius. In 1650, Salmasius discovered, in the Palatine library at Heidelberg, a MS. belonging to the tenth century, which contained the complete Anthology of Constantine Cephalas, upon which our present 'Anthologia Graeca,' revised by Brunck, and ed. by Jacobs, is based. A later edition, and with a collection of fables, assigned to Aesop, to which he prefixed a Life of the father of fabulists, which is full of absurdities. Some of the fables which are attributed to Aesop by good and antient authorities are not found in this collection, which is of less value as containing more fables not properly incorporated in it. There are two MSS. of this collection of fables, one of which is in the king's library at Paris.

PLA

PLA

[ESOP.] Planudes also made a translation of the 'Metamorphoses' of Ovid, prose which, was edited, in 1692, by Dioconomos; also a Greek translation of Cesar's 'Gallic War,' which was printed by Jungermann in his edition of Cesar, Frankft, 1608; but it is a disputed point whether this is the original of Valerian's Latin version of that same, as that of some works of St. Augustine, and Macrobius on 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 worth being published, and are scattered in various libraries. His literary character on the whole is low; he wanted perseverance and honesty, and was guilty of several forgeries, especially in his 'Anthology,' his 'Life of Aesop,' and his 'Tales.'

PLANULACAE, m. De Blancville's name for his second family of the Celidaceae, Bl., containing the genera Renuina and Penerolopsis. [FORAMINIFERA, vol. x., pp. 347, 348.]

PLANULINA, f. Definition. [FORAMINIFERA, vol. x., p. 347.]

PLANULINIA, m. D'Orbigny's name for a genus of microscopie Foraminifera. [FORAMINIFERA, vol. x., p. 348.]

PLANULITES, Linn. (Discorbus or Discorbytes of the same author.) [FORAMINIFERA, vol. x., p. 348.]

PLASTIC CLAY. The lower part of the Tertiary series of England and France yields, with green-sands and pebbles, a clay, called plastic clay, or the London clay, from which special use is made for the potter. The series of beds related to these clays and sands has received the name of plastic-clay formation, but, by a large view of its geological and zoological characters, it may be ranked in the same group as the London clay, and thus be contained in the Eocene deposits of Europe.

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 Paraná and Uruguay. Where this river enters the sea, there are two sand-banks,off Cape S. Antonio, its width is not less than 120 miles; and between Punta de las Pedras and the Barrancas de Santa Lucia above Monte Video, it is still 53 miles wide; but above and below this point, its breadth is not more than 10 miles, and opposite Colonias they are hardly 20 miles apart. The estuary continues to preserve this width to the confluence of the two large rivers which fall into it. This estuary is very shallow. At its mouth it is only ten fathoms deep on an average, and this depth gradually decreases. Opposite Monte Video the average depth is not more than three fathoms; and this may be considered the average depth of the La Plata to Buenos Ayres; so that vessels drawing more than 16 feet of water cannot sail up this river. On the other hand, the part of the river opposite Buenos Ayres is from seven to eight miles from that town: this part is called the outer roads, and between them and the inner roads there is a sand-bank. Small vessels and cattle pass at times from one to two miles from the shore. The navigation of this estuary is very difficult, owing to the very dangerous shoals, the strong and irregular currents, and the sudden tempests to which it is subject. Between Monte Video and Buenos Ayres there are four banks, La Barca, Barcos, Moray, Santiago Bank, Oriz Bank, and Chico Bank, of which the third is very extensive. When the river is low, there are only from seven to nine feet of water on them. The currents are extremely irregular and strong, a circumstance easily accounted for, when it is considered that the larger of the two tributaries, the Paraná, rises within the tropics and during the rainy season brings down an immense volume of water, and that the wide expanses of country being bounded either by low and level or very slightly 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 pampas, 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 them the river is to all intents and purposes a channel, when the south-west wind begins; but after a few hours the water falls rapidly, and vessels are left aground. Instances are known of the upper part of the estuary, opposite Buenos Ayres, having been so much affected by strong south-west winds, that vessels have been blown several miles into its bed to places where ships usually anchor: accordingly, it is not unusual for the water to fall in the outer

PLA

PLA

VOL. XVIII.-2 F
road of Buenos Ayres, in less than twelve hours, from six to two fathoms in places where the usual depth is four fathoms. All who have seen must remark 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. Men may rest certain that this point, 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 been hitherto noticed in this wide expanded bay. A fact that this amount the bay may be more apparent than real; for where the depth of water is so fluctuating and the currents are so variable, it is difficult to distinguish the precise effect of tides, except by a series of observations far longer than we have been permitted with.

Through this 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 estuary 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 Aspí, situated between 20° 30' S. lat. and 43° 45' W. long. Another river, the Uruguay, 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 16° N. lat., which is 1,300 miles from its entrance with the Paraná, in a straight line, and perhaps not less than 1,200 miles measured along the bents of the river. The Rio Pilcomayo is too shallow for navigation, but the Rio Ver- mejo, another affluent of the Paraguay, navigable from its mouth upwards to the confines of its two principal branches, the Lavayén and Rio de Tarja 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, and the mouth of its waters, which is about 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 cutarugas occur about 150 miles above the mouth, which cannot be passed, except when the water is at its highest level.

(Surveying Voyages of the Adventure and Beagle; Parías's Buenos Ayres, and the Provinces of the Rio de la Plata; and Ignacio Núñez, Account of the United Provinces of the Rio de la Plata.)

PLATA. LA. The Provinces of the Rio de la Plata, also called the Argentine Republic (República Argentina), comprehend a large part of the surface of South America. The river Paraguay, and the Rio Negro, have not been fixed at 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 25° S. lat. chiefly constitutes the boundary of the province, and the country extends from 41° to 25° S. lat., a distance of 1320 miles in a straight line. On the west, the highest part of the Andes divides it from the Bolivian province of Tucumán; and on the east it is separated from Paraguay by the course of the Rio Paraguay, and from Brazil and Randa Oriental (Uruguay) 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 has not been fixed, although it has been greatly debated, and the current makes a strong division of the Andes. The western boundary is underlaid by a great system of mountains, the eastern by an extensive system of low mountains, called the Sierra de Cordova.

1. Mountains, and Countries enclosed by them.—The mountain-range which traverses South America in all its length, from the Strait of Magalians 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 arid and mountainous, the indications of the western part of the Andes from 57° S. lat., are more than 40 miles distant from each other, of which the western is supposed to be the more elevated. A considerable part of the western range rises above the snow-line, in which these two branches are separated, but not above the sea-level, and among its summits there are three volcanoes. The most southern, the Volcano de Villa Rica, or Cerro Imperial (39° 10' S. lat.), attains an elevation of more than 16,000 feet, the sides, to a great distance below the summit, are covered with perpetual snow, except 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 a terrible fire which annihilated its whole forest. A large whole extent forms the watershed between the rivers that run to the Pacific and Atlantic oceans, and is therefore considered as the boundary between the Paraguay and the Argen- tine Republic; two branches of the river navigable from its source and among four among them are volcanoes, the Volcanes de Antuco (35° 50' S. lat.), de Chilán (36° 5' S. lat.), de Pe- teros, or Curico (35° 5' S. lat.), and de Rancagüa (34° 10'). A much greater number of volcanoes is marked on our maps, but it has not been ascertained that they really are volcanoes. The general elevation of this portion of the Andes may be from 12,000 to 13,000 feet above the sea, and consequently it approaches the snow-line, as is shown by the mountains, the side of which is never more than a few degrees from the vertical. 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 Planche pass (35° 10' S. lat.) is much lower; as there is vegetation upon it; and it probably does not exceed 11,000 feet. The second, called II Paso de las Damas, occurs near 34° 50', and it is clothed with vegetation even at its most elevated point, it is supposed not to rise above 11,000 feet.

Between the 40° and 30° S. lat., the Andes are not far distant from each other, and they enclose the elevated valley of Tunuyán, which is about twenty miles wide, and 7500 feet above the sea-level. The ranges, which run east and west, and divided nearly north and south, are nearly double that of elevation. The pass called Portillo, which traverses the valley obliquely, rises on the western chain of the Andes to 13,210 feet, and on the eastern to 14,365 feet. This pass is only open from the beginning of January to the end of April, being blocked up by snow 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 west, and 35° and 30° S. lat. It is apparently being covered with perpetual snow, except 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 a terrible fire which annihilated its whole forest. A large whole extent forms the watershed between the rivers that run to the Pacific and Atlantic oceans, and is therefore considered as the boundary between the Paraguay and the Argent-
one another by ravines or gorges. 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 a continuation of the Commonwealth of Novembre, which reaches 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 Alto de Acobagua, a higher point, which rises on the globe 32,200 feet above the sea-level: it is within the boundary of the Argentine Republic.

North of 28° S. lat. the Andes assume different characteristics. As far north as 26° 31'. S. lat. the Andes consist of three parallel but unconnected ranges. The western range forms one continuous mass of mountains with those which lie farther south and north, but the central and eastern ranges rise abruptly from the plains along the east 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 above 5,000 feet in height; it has no volcanic occurrences in this mountain-mass; and indeed no volcano occurs as occurring between the volcanos of Acobagua (32° 13'. S. lat.) and that of Ateacama (21° 38').

The Andes in so far as they are farther south, are still farther removed from the sea, and from north to south, several easy passes lead over them, but they are only occasionally used, the country along the Pacific being nearly a desert. The central range is called Sierra Fatamita, from the celebrated silver-mines which are found on its eastern declivity, and which bring enormous sums into the mountain-masses of that part; it reaches to 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 the eastern declivity of this mountain-mass are the mines. The eastern range of the Andes, called Sierra Velasco, preserves nearly an equal elevation in its whole extent, and its height probably falls short of 5,000 feet, as it is rarely covered with snow even in winter; it is only 1,000 miles long, and is the western mass of Fatamita. The valley which lies between the Andes and the Sierra Fatamita is called the Vale of Guadacol: it is about 140 miles long, and 24 miles wide. A river, called the Bermejo, rises at the most northerly 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 Fatamita, and entering the sea is either lost in the sandy surface of that tract or finds its way into the sea in all its ramifications. The valley of Guadacol 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 minerals to the sea. The country is also very fertile, and does not speak the Quichua language, and who partly live on the vicuña, 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 Fatamita, which is enclosed by the Sierra Fatamita 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 desert, and the only vegetation is those few places covered with salt. In the neighbourhood of the Cerro Nevado, the rills of water which descend from the mountains form small rivers, which run to the plains, and supply the fields of irrigation. The climate of this eastern range is warm 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 few, and are called by the name of Puna. The potato is indigenous in the Fatamita mountains. From 6000 to 8000 barrels of wine are annually exported from this valley to Rioja, and thence to the other provinces of the province of Salta. The maize is harvested and eaten the whole year round; 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 70°. Of fish there are three, which live 3000 feet above the valley. Heavy rain is uncommon, but snow is frequent, and at all seasons, on the Sierra Fatamita. Thunder-storms also are common, and accompanied by very large hailstones. In winter, when the wind from the north, called sonda, sometimes blows with great force and produces the effect of a sirocco; it raises the thermometer to 90°.

North of 28° 31'. 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 left bank of the river Llegua, on the confluence of the two rivers Lajay 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 is without a doubt that belongs to the Argentine Republic, and included in Bolivia where the snow-capped Alturas de Liper form its northern border. The descent of the Andes towards the Pacific terminates it in the west. The highest part of this extensive region, which lies between 65° and 68° W. long., and between 25° and 22° S. lat., is very properly called El Despoblado, or the inhabited country. Its elevation has not been determined, but it is very probable that it is somewhat less than that of the Andes, and may therefore be inferred from the total want of every kind of cultivation; even the quinoa appears not to succeed. It is however so continually covered with grass, on which numerous herds of cows and vicuñas, pasture, and chinchillas subsist. These animals are of small size, and are found in some rivers, and salt, which covers a large part of the surface, supply to the few Indian families dispersed over this inhos hospitable region the scanty means of subsistence. They are the original inhabitants, and are divided into two families, the suno and the toma, and live in small huts 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 Salt to Atacama in Bolivia. Though the whole region rises so gradually to the mountains, that it cannot be said to be covered with perpetual snow. Even the chain 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 very 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 Ambato and Sierra Antica. The summit is covered with perpetual snow. Even the chain 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 very 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 Ambato and Sierra Antica. The summit is covered with perpetual snow. Even the chain 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 very 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 Ambato and Sierra Antica. The summit is covered with perpetual snow. Even the chain 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 very 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 Ambato and Sierra Antica. The summit is covered with perpetual snow. Even the chain 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.
on it in the month of June. It is only inhabited by guana-
coces and vicuñas: it terminates with a steep descent on the
Rio de Tarija, near 22° 32' lat.

The countries enclosed between the eastern border of the
Departamento de Corrientes and 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 country, are comparatively
well-cultivated and populous. The longest of these valleys
is that which is watered by the Río Guachipas or the upper
course of the Río Salto. It begins at its upper extremity,
on the eastern slope of the Table-land of Yavi. The river
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 little estuary. The water of the former is so
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, and rice and melons are made, which finds a ready
sale in the neighbouring districts.

The Vale of the Río Guachipas terminates in the Plain
of Salta, which extends about twenty miles in every direc-
tion. A road runs north and east from this plain to the
Abra de Cortaderas, a distance of about 160 miles.

Through this valley lies the road which leads from Salta to
Potosí, 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 roads 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
name is situated nearly at equal distances from both extremi-
ties of it. The valley of Jujuy, or that of Rio Jujuy,
branches off from the Valley of Jujuy, and extends further
than 100 miles between the Sierra Lumbre 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
the tropical vegetation appears in all its luxuriance. Forests
of large trees cover the banks of the rivers and ascend the
hills to a considerable elevation. Besides maize, large
quants of potatoes and tobacco are grown in the vicinity.
In the lower parts the coca (Erythroxylo Coast), 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 Lumbre there is a tract of considerable
width, called the Plain of Tucuman, which is very fertile,
and has a pleasant and healthy climate. The surface
is furrowed by numerous small rivers, which originate on the
declivity and at the foot of the range, and descend in a
south-eastern direction to the lower country, which is further
east. This region is an inclined plain, which sinks to the
south-east with an almost imperceptible slope. Having a
hot but dry and healthy climate, and abundance of wa-
ter for irrigation, it is the most fertile tract of the Argenti-
ne Republic, and is hence called the Garden of the Río de la
Plata. Its width south of the Río Salado exceeds 70 miles,
but north of this river it 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-cane is said to grow nat-
urally 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 five-sixths of the
surface of the provinces of La Plata. The most northern
part of them, which is known under the name of El Gran
Chaco, is the greater part of the area supplied with water
in the banks of the Río Paraguay, and from the northern boun-
dary of the republic to the confluence of the Río Salado with
the Parana, occupying all the tract between these rivers.
This immense area is supplied with water of the Atlantic
Ocean, 120,000 square miles, is very little
known, there being 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 hun-
der about in the woods, and live on the produce of the chaco
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
Río Paraná and the Río Paraguay on both sides of the Río Pilcomayo, and which is called the Northern
there is a 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 a complete desert for the greater part of it. The
general character of the soil is sandy, and in many places it is
covered with inundations of salt; in others it is interspersed
with small salt-swamps. No part of it produces grass, but
the sparsely dispersed stunted prickly trees. It is uninhabited,
except on the banks of the Río 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 Río Dulce,
though not considered as forming a part of it, does not ma-
terially differ from it in features, soil, and vegetation, except
along the banks of the Río Dulce, where the water of which
is sweet, can be used for irrigation, and is in many places used
for that purpose.

West of the Río Dulce and between 28° 30' and 30° S.
lat., a desert extends as far west as the neighbourhood of
the Sierra Velasco, from which it is separated by a fertile
tract of country, called the Chaco, hardly 20 miles wide. Where
the desert is traversed by the road between the
San-Diego del Estero, near its eastern extremity, it is about
60 miles wide, but farther west it grows much wider. The
vegetation is limited to a kind of salado, from the
ashes of which soda is extracted. This desert is probably
the hottest part of America, the heat prevailing 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 attrib-
ted to the saline particles in the soil, but partly to the lowness
of the country, it having been said that it is almost
inaccessible by observation, that the surface of the desert is
only a few yards above the level of the sea at the town of Buenos
Aires, 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
neigh-

It was formerly supposed that the country was watered only
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 30° and 32°
lat., and extends more than 120 miles, 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 elevated 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 val-
leys, which runs along the eastern unbroken declivity. Near
32° S. lat., the table-land branches off into two ridges, of
which the eastern is called the Sierra de Pampa and the
Serranuela. They run north and north-westward, and at
their northern extremity are more than 50 miles each from
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 fig and
peach trees.

The country which extends from the Sierra de Cordova
to the Río Paraguay is hilly, or strongly undulating along
the base of the higher lands, and presents some
salt-corn in the lower tracts where the fields can be irrigated.
This hilly country extends about thirty miles, when the
country sinks into somewhat irregular plains. Some parts of
these plains are furnished with water, but others are woody
wood, 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
znimosas or stunted prickly trees. The plains are generally covered with coarse grass, but in some parts, especially in the eastern districts, there is extensive cultivation of sugar, which is grown on numerous small streams which flow from the eastern declivity of the Sierra de Cordova, and unite into three rivers, the Prmero, Segundo, and Tercero, do not join the Paranak, but are separate streams. Some extensive settlements are made in the country north of the Rio Salado. Their natural state is a continuous level plain, covered with coarse luxuriant grass, growing in tufts and partially mixed with wild oats and trefoil. Extensive tracts are entirely overgrown with thorny bushes, which are utilized for fuel, and the country is entirely denuded of trees and shrubs. Near the dwellings of the inhabitants, only single trees are met with. The level plain contains shallow depressions in which rain-water is collected and forms pools. This water evaporating in the heat of summer these 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 thistles 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 principal occupation of the country is agriculture, sheep have much increased in 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 of North America has been entirely stopped, but flour and corn have been shipped to Brazil: we may thus form an important article of export. Though the rivers are dry in summer, except the Rio Salado and the largest of its affluents, whose water cannot be used on account of its saltiness, fresh water may be procured at great depths by digging wells. Along the banks of the La Plata and Rio Paranak, between Buenos Ayres and the small town of S. Pedro, there is a broad belt of low ground, which is annually inundated by the floods of the Rio Salado for several months, and fertilised by the muddy deposit of that river.

The country south of the Rio Salado is of somewhat different character. Near the banks of the river it is a vast morass, extending to 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 thick-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 continued to which they are a great deal of the waters of which cannot make their way to the Rio Salado or to the sea. These swamps form a great obstacle to the extension of agricultural settlements; for though the country is not fertile, it is very fertile in the soil of the Sierras del Vulcano and the more western ranges of hills appears to be inferior in fertility to the country north 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, that runs in the same direction, and is called Sierra Guamin. 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 of a similar description occur in the centre of the Pampas, and lie in the same direction.

The country between the Sierras del Vulcano and the Sierra Ventana is a level country, interspersed with some low hills; the surface is generally dry, and fit for agricultural purposes, excepting the chain of the Sierra de Vulcano. Darwin found the country, to the width of 80 miles, covered with swamps. In some parts there were fine moist plains, covered with grass, while others had a soft, black, and peaty soil. There were also many extensive swamps, and large beds of reeds. He compares this tract with the
better part of the Cambridgeshire fens. These swamps probably owe their origin to the rivers which depend on a river which rises in the Sierra Venitana and Sierra Guaminia to the level country.

The greatest part of the Western Pampas, namely, all the country west of 62°W. long., and extending thence to the Andes between 40° and 34°S. lat., is almost unknown to the Argentine Republic, and only been explored along the courses of the rivers, except in one line, in which it has been traversed by land. The few points which have thus far been examined are too isolated to authorize us to form an idea of the capabilities of this immense country. But we are well acquainted 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 Chile.

In the country which surrounds the sources of the Rio Salado, the soil of the plain begins to be impregnated with marlstone and sand, and continues more or less to the base of the Andes. But it has a different character east and west of 66°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 separate the swamps are low and sandy, and in some parts, 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, with an abundance of coarse sand mixed. In fact, there are lakes containing salt water. Many of them are from 10 to 20 miles long, and nearly as wide. These lakes are most numerous between 64° and 66°W. long., where an extensive shallow depression occurs, perhaps 50 miles in length by 20 miles in width, which 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 furrowed by ravines; the hills are separated from each other by grassy plains. The soil is stony, short, and stony, and there are low bushes on it. The hills are partly clothed with thorny trees of a stunted growth, and with broom-brush. The river which intersect this country runs 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 in the hilly tracts of this part of the Western Pampas that there are any agricultural settlement; the level country there are only cattle-farms.

This 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 in 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 San Juan are rather numerous, 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 plantations of vines, figs, peaches, apples, olives, and nuts are very extensive, and the Rio Neuquen goes to 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. The southern part of this region, called the Río de la Plata, divides its northern border from the Rio Paraná, and it is supposed that it is supplied with water from that river by infiltration, as no stream enters it, and it supplies for 150 miles, the Minas R. to the Uruguay, and 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 climate of this region is very mild, and the influence 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 a country of great extent, and the most healthy of the provinces of moderate extent. 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 want of forests in the surrounding countries makes this wood of timber excellent fuel for the carpenters, blacksmiths, work, carriages, and as timber for small houses. The interior of the country appears to be much more hilly than along the rivers, and is occupied by the forest of Monteíl, which extends more than 100 miles from west to south, with an average width of 40 miles. It is encumbered with brushwood 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 saline. The seasonal inundation of this country, which extends from the lake of Ybara 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 the natives, who have been converted to the Roman Catholic faith, and who have formed a sort of regular community, different from the rest of the country.

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, the highest of which are called the Andes, which extend south, and constitute the peak of the Andes from the Strait of Magalhaens.

Rivers.—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 estuary called La Santa Fé the Rio Paraná; but 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, on the table-lands of the Sierra de Cordova, and runs to the south-east, 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, where it gradually turns to the south-west, and continues in that direction to the large island of Añipí, a distance of about 100 miles. This part of the river is not navigable in all its extent, as there are several rapids and small falls, the last in the neighbourhood of the island of Añipí. This is not the case with the Uruguay, which begins to be navigable about 200 miles from the point where the uninterrupted navigation of the Paraná begins, and where large quantities of timber are shipped, the river being navigable for vessels of 500 tons and upwards. The Uruguay runs to the south-east, and in 120 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, which flows 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. A few miles above the point where 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 outlets is that which is called the Paraguay, which is the largest, to which there is seldom less than two fathoms and a half of water. The mouth called Paraná de las Palmas is the deepest, next to the Guazu. The Paraná runs nearly 900 miles from its source, and the Paraguay nearly 1,000 miles. Both rivers are navigable for vessels of 300 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 all the upper branches, it begins to rise, and continues to do so for four months, to the end of April, when the average rise below its junction with the Paraguay is stated
to be 12 feet. It then inundates the adjacent grounds, especially below Santa Fé, and the tracts which are thus laid under water have a fertile soil, from which it is estimated that the surplus water is carried from one system of lakes to the other. As these channels lie from north to south, it is obvious that the system is the highest in the north and the southern the lowest. The most northerly, called the lakes of Guanacache, occurs between 31° 40' and 32°. Neither the number nor the extent of these lakes is exactly known. Their waters are covered with salt incrustations during the winter and spring. Thereflows into fresh-water rivers, the Rio de S. Juan and the Rio de Mendez, both of which rise in the Vale of Usupalla between, the two ranges of the Andes. The Rio de S. Juan drains the southern part of the basin; the water of the passes through the Paramilla range near 31° S. lat. flows eastward about 50 miles, and then southward a somewhat greater distance. Its waters in the plain are used for irrigation. The Rio de Mendez, or, as it is called, the southern districts of the Vale of Usupalla for about 50 miles, then turns eastward, passing by a chasm through the Paramilla range, and then declining to the north, it likewise reaches the lakes of Guanacache. The waters of this river also are used for irrigation. It is supposed that the Rio Vermejio, which waters the Vale of Guandacol, also reaches the lakes of Guanacache by a southern course; but the waters of this river, which are fresh in the vale, imbibe a bitter taste and plants which are not salubrious, when issuing from the vale. From the lakes of Guanacache a river issues, which at first runs east and then south, and, after a course of about 250 miles, falls into the second system of the Bovedero; and thence runs south through the Desaguadero, and flowing through a level country slightly elevated above its banks, it expands in some places to a great width, converting the adjacent tracts into salt swamps. The water of this river is only fresh during the early season of the year (from December to March), falling in the snow on the Aegis morets; during the remainder of the year it is salt, and its banks are covered with saline incrustations. The lakes of the Bovedero are likewise imperfectly known, and their extent. The same Beltrand properly applies only to the most northern of these; the waters are salt for nine months of the year, and on its bank salt is collected for sale in that season. These lakes lie between 33° 30' and 34° 30' S. lat. and between 55° and 57° W. long., and, besides the Desaguadero, receive the waters of the Tunuyan. This river drains the vale of the same name, which is enclosed 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, flowing into the lakes of the Bovedero 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 run in a south-east direction into the Rio Nuevo, which falls into the Rio Diamante. The country between the lakes of the Bovedero and the Rio Nuevo being very low and level, the lakes, when swollen by the increased supply of water during the melting of the snow on the Andes, inundate a large portion of the surrounding lands, and the waters into the Rio Nuevo, which must therefore be considered as the drain of these lakes. The Rio Diamante rises on the eastern declivity of the peak of Cauquenes, a snow-capped summit of the Andes, and runs eastward for about 150 miles, when it is joined by the Rio Nuevo. Formerly it did not unite with that river, but joined the Rio Atuel in the year 1812 it changed its course. After the junction with the Rio Nuevo, it flows southward under the name of the Rio Salado, or Desaguadero del Diamante, and after a course of about 150 miles more, it joins the Chadi Lebuj. The last-mentioned river is very little known. Its principal affluent seems to be the Atuel, which rises south of the Montano de Petero; it falls eastward. After its junction with the Desaguadero del Diamante, it runs about 36 miles, and is then lost in the Urre Laquuen, a lake of considerable extent, but very imperfectly known, in 37° 36' S. lat. Its waters are very salt, whence it derives its name, and, in the language of the Ragueles, 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 useful both for navigation and irrigation. The Rio Lebuj, 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 wide through the Cuna Lebu, or Rio Negro, which now is considered to constitute the southern boundary of the Argentine Republic, rises within the range of the Andes in two branches; the Catapuliche, which runs south, and the Limay Lebu, or Rio de la Encarnacion, which flows north. At the junction of 80 to 100 miles of the two branches, a part of the catapuliche, a large alluvial, which is said to be navigable for small craft more than 200 miles: after this junction the Limay Lebu takes the name of the province of Buenos Ayres. The remainder of its course lies in an eastern and southern direction, for more than 400 miles, and finally joins the La Plata on the southern coast.

The length of the demarcation between the two branches of the Catapuliche is thus described by a traveler, who went on foot a little way into the interior: "The country is sandy, without trees, and the limits of the jurisdiction of the Governor of Buenos Ayres were indicated to me by such sorts of stones as I fancied were not the product of the country, but brought by the river."

A part of the pampas subjects are subject to periodical droughts of long duration, especially the north-eastern corner of the Western Pampas, which includes the northern part of the province of Buenos Ayres and the southern part 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 during that period. The loss of cattle in the province 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.

Production.—Respecting the principal objects of agriculture, the Argentine Republic may be divided into two regions, which are separated from each other by the Gran Salinas. On the north of it there is the best natural province for the cultivation of mandioca, rice, Indian-corn, and the coca plant is 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 central range of the Andes are the continual pastures 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 part of the country is also much celebrated for its tobacco, as the algarroba tree, from the fruit of which, mixed with maize, the Indians make cakes, and by fermentation, chicha, an intoxicating spirit: the quinaquinas, the palm-tree, the plant from which the Paraguay tea, or mate, is taken, the cacusus which bears the cochineal insect, the aloe from which yarn and ropes are made, and the indigo and some other plants used in dyeing. In the Gran Salinas itself a kind of salana grows from which soda is extracted. The fruit-trees which are cultivated abound principally in the south and south-west of the country, as the vine, orange, fig, olive, peach, apricot, apple, and pear. On the banks of the Paraná estuarii (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 head of cattle is about four millions, of which a greater proportion than one in six of Buenos Ayres alone supplies the necessities of the nation. They 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, donkeys, and mules are also very numerous. They 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 tajassoo, the bisccocho (a kind of rabbit, which is very numerous, and whose skins have lately been brought to England for furs), deer, and some kinds of monkeys. The puma is found in the plains and on the mountains, but the wild lamas, vicunnas, and alpacas only in the cold regions on the elevated table-lands. The water-hog, or carpincho (Hydrochoerus Carpinch), 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 carrier-ruff, and several other rapacious birds. Serpents are not numerous, but there are many kinds of venomous insects, venomous spiders, bugs or benculas, fleas, musquitos, and nignas. Locusts, as in all countries where arid plains are found, frequently appear in vast swarms. Bees are common in the country, and 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, in the Patagonias, the oyster is abundant, and is sold about five cents the pound. The bed of the stream without wetting their feet. The panamero however precipitates the moisture of the air, and restores to its usual degree of elasticity. At Buenos Ayres the thermometer rose in January, 1852, to 94°, and in August it sunk 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°. The summer is from November to April.
In Catamarca and Tucuman, where it is used for dyeing the vicuña and alpaca wool.

The southern rivers and the pasture-grounds south 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 Andes by a few military posts, and, though the Indians from time to time took advantage of the few половину indigent inhabitants, 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 latter part of the last century the Indians, laid waste the country as far north as the Sierra de Cordova, killing the men, and making women and children captives.

After several attempts to bring about a peaceful arrangement and to replace the whites by a strong force against them, under the command of Roca, the present dictator of Buenos Ayres, who scourced (from 1832 to 1835) the whole country as far south as the Cosu Lebu, killed many thousands of the Indians, and rescued 1500 whites who had been captured in the predatory expeditions of the natives. These active measures seem to have had a good effect, and at the same time the country as far south as the Cosu Lebu was annexed to the Argentine Republic.

The Indians may now be considered as not only permitted to inhabit these countries with the consent of the republic. These southern tribes are divided into innumerable petty tribes or families, each governed by its own chief, or adobo, who occasionally claims by hereditary title, but has little power. The chiefs are usually all submitted implicitly to his direction. These tribes are frequently quarrelling and fighting with one another, and are only united in their predatory excursions against the country they inhabit. They speak a common language. They descend from the same stock as the Araucanians in Southern Chile. All these tribes are comprehended under three denominations: the Pehueches (Pine-tree Indians) inhabit the Andes and the mountains to the south along its eastern declivity; the Ranqueles (Thistle Indians) occupy the central plains, and are more troublesome than the others to their neighbours; the Puechues inhabit the country along the Atlantic, between the Rio Salado of Buenos Ayres and the Chaco river. This last-mentioned division of Indians is now on friendly terms with the whites. They are a tall race, averaging near six feet in height. They have numerous herds of horses. They eat the flesh of the mares and colts, and a great deal of braid of maize, which they obtain from the Spaniards in exchange for salt and cattle, and blankets made by women. Their dwellings are made of hides sewn together, and are usually more than two stories high. They live in vast plains in quest of pasture for their horses. All of them, men, women, and children, live more on horseback than on foot.

Political Divisions and Population.—Under the Spanish dominion, the countries now comprehended within the Argentine Republic were divided into four intendencias, Buenos Ayres, Cordova, Tucuman, and Salta. When these countries obtained their independence, a new division was made in 1813 and 1814, but as the physical character of the country had not been attended to in making this division, some of the new states again divided: at present there are thirteen republics. It was originally intended to unite them all under a central government, but the attempt that was made did not succeed. The states were dissatisfied with the authority and influence of the central government in their internal affairs, and they ceased to send deputies to the congress. We may therefore consider the Argentine republic as an aggregate of thirteen republics, quite uncon

P. C. No. 1311.

they are not so tall, and on the average not taller than the inhabitants of southern Europe.

The southern rivers and the pasture-grounds south 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 Andes by a few military posts, and, though the Indians from time to time took advantage of the few половину indigent inhabitants, 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 latter part of the last century the Indians, laid waste the country as far north as the Sierra de Cordova, killing the men, and making women and children captives.

After several attempts to bring about a peaceful arrangement and to replace the whites by a strong force against them, under the command of Roca, the present dictator of Buenos Ayres, who scourced (from 1832 to 1835) the whole country as far south as the Cosu Lebu, killed many thousands of the Indians, and rescued 1500 whites who had been captured in the predatory expeditions of the natives. These active measures seem to have had a good effect, and at the same time the country as far south as the Cosu Lebu was annexed to the Argentine Republic.

The Indians may now be considered as not only permitted to inhabit these countries with the consent of the republic. These southern tribes are divided into innumerable petty tribes or families, each governed by its own chief, or adobo, who occasionally claims by hereditary title, but has little power. The chiefs are usually all submitted implicitly to his direction. These tribes are frequently quarrelling and fighting with one another, and are only united in their predatory excursions against the country they inhabit. They speak a common language. They descend from the same stock as the Araucanians in Southern Chile. All these tribes are comprehended under three denominations: the Pehueches (Pine-tree Indians) inhabit the Andes and the mountains to the south along its eastern declivity; the Ranqueles (Thistle Indians) occupy the central plains, and are more troublesome than the others to their neighbours; the Puechues inhabit the country along the Atlantic, between the Rio Salado of Buenos Ayres and the Chaco river. This last-mentioned division of Indians is now on friendly terms with the whites. They are a tall race, averaging near six feet in height. They have numerous herds of horses. They eat the flesh of the mares and colts, and a great deal of braid of maize, which they obtain from the Spaniards in exchange for salt and cattle, and blankets made by women. Their dwellings are made of hides sewn together, and are usually more than two stories high. They live in vast plains in quest of pasture for their horses. All of them, men, women, and children, live more on horseback than on foot.

Political Divisions and Population.—Under the Spanish dominion, the countries now comprehended within the Argentine Republic were divided into four intendencias, Buenos Ayres, Cordova, Tucuman, and Salta. When these countries obtained their independence, a new division was made in 1813 and 1814, but as the physical character of the country had not been attended to in making this division, some of the new states again divided: at present there are thirteen republics. It was originally intended to unite them all under a central government, but the attempt that was made did not succeed. The states were dissatisfied with the authority and influence of the central government in their internal affairs, and they ceased to send deputies to the congress. We may therefore consider the Argentine republic as an aggregate of thirteen republics, quite uncon

P. C. No. 1311.
proper term, despotic governments have taken the place of republican institutions. In such circumstances it can hardly be hoped that republican institutions will again be formed, and perhaps the present despotism may assume the mild form of a monarchical government, and bring about a more uniform administration.

The estimated population of the provinces of the Rio de la Plata, in 1836-1837, according to Paris, is as follows:—

- Buenos Ayres from 180,000 to 200,000
- Santa Fé 15,000 to 20,000
- Entre Rios 30,000 to 35,000
- Corrientes 35,000 to 40,000
- Cordoba 35,000 to 40,000
- Santiago 45,000 to 50,000
- Tucuman 40,000 to 45,000
- Salta 50,000 to 60,000
- Tucuman 30,000 to 35,000
- La Rioja 15,000 to 20,000
- San Luis 20,000 to 25,000
- Mendoza 35,000 to 40,000
- San Juan 22,000 to 25,000

Total: 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 late extended its southern boundary, which now includes the Bahia Blanca 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 the Rio de la Plata. If the Buenos Ayres [Río de la Plata], 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 Fort Melquino, 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 Melquino to the mouth of the River Paraná divides the territory of Santa Fé from that of Buenos Ayres. 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-Vulcanell and Venta 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 province, especially cattle, sheep, wool, 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 the animal and vegetable forests of the megalithum, are often found 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 power into his own hands.

There is no town of importance in this state, except Buenos Ayres. [Buenos Ayres. J. Pedro and S. Nicolas, which are on the banks of the Rio Paraná, contain only from 500 to 1000 inhabitants.

2. Santa Fé extends along the Rio Paraná from the Arroyo del Medio to the confluence of that river with the Rio Salado, and afterwards along the latter stream northward to an undetermined point in the desert. It is divided from Cordoba by the low uncutitated tract in which the Laguna Salada de los Porongos is situated, and in which the rivers Primero and Segundo are lost. The southern is the only boundary which is not formed by a desert, the most southern settlements being contiguous to those of Buenos Ayres. But the large part of the surface is unfit for agriculture, though it supplies indifferent pasture for cattle. Cattle and mules are exported. It was some years since devastated by the Guaycuru Indians, who live within its boundaries, but this tribe is now nearly extinct. Among the inhabitants there are many of Guaraní origin, who settled here after the expulsion of the Jesuits in 1776. Lately, however, a considerable part of the country has been cleared of this trepôt of the goods which were exchanged between the western states and Paraguay, but that branch of commerce has entirely failed, since Paraguay has broken off all connection with the different countries. Of late it has established a trade with Monte Video, from which it receives foreign goods. Rosario, on the high precipitous banks of the Parana, has above 1000 inhabitants. 3. Entre Rios, so called from being situated between the rivers Uruguay and Paraná, comprehends only the southern portion of the country so situated, the boundary-line between it and Corrientes being formed by the rivers Guayquirara and Mocoreta, between 30° and 30° 30' S. lat. The former falls into the Parana, and the latter into the Uruguay. It has the great 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 grass. The climate is warmer than that of Buenos Ayres. Except a few families of Guaraní origin, the country is inhabited by the descendants of Spaniards. Its government still preserves republican forms. The capital, Bajada, or B.I.C. [Buenos] [Río de la Plata], which is situated where the Parana and nearly opposite Santa Fé, is built on the top of a lofty gently-sloping cliff, whence it derives its name Bajada de Santa Fé, or the Descent to Santa Fé. It exports great quantities of hides and tallow, and contains about 6000 inhabitants. Concepíon de la Chiva, on the banks of the Rio Uruguay, is a small place, with 1500 or 2000 inhabitants, and some trade with Monte Video.

4. Corrientes comprehends the northern portion of the peninsula formed by the two rivers Uruguay and Paraná, and is exposed to the climate warm. 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. The capital, Corrientes, is situated below the confluence of the Rio Paraná with the Paraguay, and stands on a considerable elevation. It is rather well built, and contains 4500 inhabitants. Santa Lucia is also a place of some importance. The northern district is forested, in which the native country of that once numerous tribe of aborigines. Nothing is known respecting its present political condition and its population.

5. Cordoba, the most important of the states, next to Buenos Ayres, comprehends the Sierra de Cordoba and the surrounding hilly country, with some adjacent plains. It is divided by the Gran Salina from Santiago, Catamarca, and Rioja, and by a travesia, or desert country overgrown with thorny bushes of the acacia and mesquite trees, forming thinly inhabited country lies between it and San Luis. On the south it extends to the country of the Indian tribes. The low sterile tract in which the rivers Segundo and Primero are lost, and the Laguna Salada de los Porongos is situated, is one of the most fertile districts in this province. Though more than 2000 inhabitants before 1825; many of them perished in the following war, and others emigrated. They were of Guaraní origin, and this country and Paraguay were the native country of that once numerous tribe of aborigines. Nothing is known respecting its present political condition and its population.
maize and fruits are raised there in abundance, but the piasios, as well as the deilities 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 Pri- marca, a navigable stream, and is a city of considerable size, with 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 the parroquia, and on the other the cathedral.

There are also ten other well-built churches, and 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 new town near the base of the Sierra de Cordova, contains 3000 inhabitants.

6. Santiago is of great extent, comprehending the western part of the Gran Salina, the country between the Rio Doce and the Rio Salado, south of 27° 30', and also a large tract of land on both sides of the Rio Dulce. But the good land is of comparatively small extent, and a largely limited to a narrow tract along both sides of the Rio Dulce, and a smaller tract on the banks of the rivers inside the country. It is in fact the only large tract of arable land in the neighborhood of the river, producing abundant crops of wheat and some good grass. Where it is not cultivated, it is mostly covered with large trees. In the deserts which surround the cultivated tract that species of cactus on which the cocalina 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 pasturage. The inhabitants, among whom are a number of mules, which are brought here and exported, and manufacture ponchos (cloaks) and coarse saddle-cloths or blankets. Some soda is extracted on the borders of the Great Salina from the salada. This country is considered the hottest in South America. Santiago del Estero, on the right bank of the Rio Dulce, has about 4000 inhabitants, and exports cochineal and ponchos to Tucuman and Peru. Matura is a small place on the Rio Salado, where it begins to be navigable.

7. La Rioja is the eastern part of the northernmost part of the territories that belong to the Argentine Republic, and has every variety of soil and climate. On the east, where it borders on the Gran Chaco, the boundary-line has not been fixed. On the west is the present department of Tarui and Potosi, in the republic of Bolivia, and is divided from them by the desert table-land of Yavi and the range called Abra de Cortaderas. It comprehends the Despoblado, whose climate resembles that of the plains of Peru and Chili, and the climate and productions resembles Europe; and the Plain of Salta and the valleys of the Rio de Cuyuy and Lavayen, which in both respects resemble the West Indies. Its commercial products consist of tobacco, sugar, and cotton. About half of the inhabitants are of Indian blood, and are engaged in raising maize and cotton in the province in a very lean state, acquire strength in the rich pastures of Salta, 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 built of brick, but not so numerous as in Cordova. In the central part of the town is 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 situation by the banks of the Rio de Jujuy, an affluent of the Lavayen; 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 the south of the city begins one of the most distant in the world. A narrow valley extends from the town to the summit of the range called Abra de Cortaderas, a distance of 90 miles by the road. The highest summit of this road appears to have an elevation of between 11,000 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 great salt works in the interior, but the provincial government of Salta. We do not know how far this attempt has succeeded.

8. Catamarca comprehends the country between the present boundaries of the provinces of Catamarca, La Rioja, Salta, and Jujuy, on the east, and the Andes on the west, which is very little known. It consists of some valleys, running between mountain-ranges south-east and north-west, and terminating in the sea. In the extreme, on the borders of the Gran Salina, being the places from which 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 winds blow, 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 by its ownsłly side. 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.

9. Rioja comprehends the country between the Gran Salina and the Andes, from 28° to 31° S. lat. and consists of a narrow strip of cultivated land along the eastern base of the Sierra Velasco, and the two valleys of Fatamata and Anticuahua. At this place the current of the river extends round the southern extremity of the Sierra Velasco must be added. The silver-mines of Fatamata are very rich, but being situated above the line of vegetation, they are worked on a small scale. Only a little of the silver from the mountains on the east of the Sierra Fatamata are fit for agriculture. The state is divided into four departments, of which that lying east of the Sierra Velasco is called Arauco, 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 Fatamata, which is included between the Sierra Velasco and Sierra Fatamata, contains rich orchards in its northern districts, and produces some wine. The department of Guadacicol is a strip between the mountain and the Fatamata, produces very rich crops of wheat. It is inhabited by aborini- gens, who hunt the vicuna 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 deal of grass. On the eastern side of the Desert there are cattle-farms. It is stated that 16,000 head of cattle are exported annually.

10. San Juan extends along the eastern declivity of the Andes, from 30° 30' to 40° 30' S. lat. containing the northern part of the Vale of uspallata and a large portion of the plain which separates the Paramilla range from the mountains of Cordova. The Vale of Uspallata is barren and nearly uncultivated. The soil of the plain is of a thin clay, but covered with stunted prickly trees of the mimosa 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
minof affluents. This irrigation renders the land exceed-
ingly fertile; without any other manure, they produce most
plentiful crops of wheat and Indian corn. The ordinary
crops of wheat are fifty for a hundred, and a bushel
eighty or a hundred for one. As a few places it is said to be two hun-
dred 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 the fertility. But as fruit-trees, especially vines, succeed
very well in this soil, wines and brandies are ex-
ported to a considerable amount. This country contains the
chlamyphorus. [CHLAMYPHORUS.] In the northern district,
called Choecha, they raise some gold-mines, whose produce is
not important.
The capital, S. 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 32° S. lat. to the old bound-
dary-line (35° S. lat.), along the foot of the Andes, and in-
cludes the southern part of the Vale of Uspallata and the
whole of that of Tunuyan. It contains the volcanoes of
Aconcagua, Mavup, 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 to the sea, has a sandy soil and does not produce
grain, 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 dew make this a great cattle bene. But it is except in the southern districts on 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:—

| Exports of the Produce of the State of Mendoza, in 1827. |
|-----------------|----------------|----------------|----------------|
|                  |               |                | No. Loads.     |
| Buenos Ayres    | 336 2144      | 299 3109 1098 | 670 2506 1098 |
| San Luis        | 70            | 458 1634      | 60            |
| Cordova         | 95            | 355 122       | 57            |
| Santa Fé        | 81            | 172 469       | 88            |
| Chile           | 12            | 700 571       | 88            |

In this table the dried fruits are omitted, as well as the dried
fruits consist of figs, peaches, apples, nute, and olives. They go mostly to Chile, whither also
from 300 to 400 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 porches. 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 2000 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 north-
western part runs northward to the border of Ríoja and the border of the Great Salinas, and it reaches southward to the old boundary-line (35° 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, occasion, occur along the road leading
from Buenos Ayres to Mendoza, in the vicinity, where on
the east of very land alternate with ridges of hills and sandy
deserts overgrown with mimosa. As the grass is coarse
and long, the pastures are indifferent; still cattle, horses,
mules, etc., are abundant, and exported to a small
amount, together with some wool. The vine and brandy
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 near the coast, it is as dry as a desert. In the
lands eighty or a hundred, and a bushel
eighty or a hundred for one. As a few places it is said to be two hun-
dred 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 the fertility. But as fruit-trees, especially vines, succeed
very well in this soil, wines and brandies are ex-
ported to a considerable amount. This country contains the
chlamyphorus. [CHLAMYPHORUS.] In the northern district,
called Choecha, they raise some gold-mines, whose produce is
not important.
The capital, S. 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 32° S. lat. to the old bound-
dary-line (35° S. lat.), along the foot of the Andes, and in-
cludes the southern part of the Vale of Uspallata and the
whole of that of Tunuyan. It contains the volcanoes of
Aconcagua, Mavup, 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 to the sea, has a sandy soil and does not produce
grain, 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 dew make this a great cattle bene. But it is except in the southern districts on 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:—

| Exports of the Produce of the State of Mendoza, in 1827. |
|-----------------|----------------|----------------|----------------|
|                  |                |                | No. Loads.     |
| Buenos Ayres    | 336 2144      | 299 3109 1098 | 670 2506 1098 |
| San Luis        | 70            | 458 1634      | 60            |
| Cordova         | 95            | 355 122       | 57            |
| Santa Fé        | 81            | 172 469       | 88            |
| Chile           | 12            | 700 571       | 88            |

In this table the dried fruits are omitted, as well as the dried
fruits consist of figs, peaches, apples, nute, and olives. They go mostly to Chile, whither also
from 300 to 400 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 porches. 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 2000 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 north-
western part runs northward to the border of Ríoja and the border of the Great Salinas, and it reaches southward to the old boundary-line (35° 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 Mendoza, in the vicinity, where on
the east of very land alternate with ridges of hills and sandy
deserts overgrown with mimosa. As the grass is coarse
and long, the pastures are indifferent; still cattle, horses,
mules, etc., are abundant, and exported to a small
amount, together with some wool. The vine and brandy
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 near the coast, it is as dry as a desert. In the
lands eighty or a hundred, and a bushel

In the following year 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 million, which diminution however may partly be attributed to the political disorganization 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, wolleens, 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, and a number of minor articles. France imports superfine cloth and linens, merinos, cashemeres, silks and cambicis, lace, gloves, shoes, silk stockings, looking-glasses, fans, combs, and jewellery. From Germany are imported cloth, linens, and cottons; from Holland, cloth, linens, gin, butter and cheese, and Westphalia hats; 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.

Exports from Buenos Ayres in 1822, 1829, and 1837.

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Value in 1822</th>
<th>Value in 1829</th>
<th>Value in 1837</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silver</td>
<td>1,115,133</td>
<td>291,173</td>
<td>272,791</td>
</tr>
<tr>
<td>Gold</td>
<td>204,340</td>
<td>647,260</td>
<td>260,157</td>
</tr>
<tr>
<td>Copper</td>
<td>2,821</td>
<td>4,842</td>
<td>3,291</td>
</tr>
<tr>
<td>Ox hides</td>
<td>2,381,585</td>
<td>3,419,156</td>
<td>3,912,565</td>
</tr>
<tr>
<td>Horse hides</td>
<td>305,930</td>
<td>426,938</td>
<td>446,192</td>
</tr>
<tr>
<td>Horse</td>
<td>11,719</td>
<td>9,000</td>
<td>26,973</td>
</tr>
<tr>
<td>Horsehair</td>
<td>114,411</td>
<td>110,046</td>
<td>211,116</td>
</tr>
<tr>
<td>Sheep</td>
<td>327,142</td>
<td>327,142</td>
<td>13,289</td>
</tr>
<tr>
<td>Chinchilla skins</td>
<td>11,900</td>
<td>11,900</td>
<td>11,900</td>
</tr>
<tr>
<td>Tallow</td>
<td>124,800</td>
<td>95,271</td>
<td>150,373</td>
</tr>
<tr>
<td>Bales</td>
<td>2,912</td>
<td>1,905</td>
<td>489</td>
</tr>
<tr>
<td>Cotton</td>
<td>1,025</td>
<td>1,025</td>
<td>1,025</td>
</tr>
<tr>
<td>Sheep-skins</td>
<td>2,912</td>
<td>1,905</td>
<td>489</td>
</tr>
<tr>
<td>Flour</td>
<td>1,025</td>
<td>1,025</td>
<td>1,025</td>
</tr>
<tr>
<td>Gum</td>
<td>1,025</td>
<td>1,025</td>
<td>1,025</td>
</tr>
<tr>
<td>Sundry minor articles</td>
<td>118,280</td>
<td>121,867</td>
<td>196,318</td>
</tr>
</tbody>
</table>

The average number of vessels which annually enter the port of Buenos Ayres is 240. In 1837 only 228 entered, and of this number 61 were British, 40 from the United States of North America, 43 from Brazil, 24 from France, 20 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 interior 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>Commodity</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salt</td>
<td>6,718</td>
</tr>
<tr>
<td>Wool</td>
<td>10,398</td>
</tr>
<tr>
<td>Sheep-skins</td>
<td>1,277</td>
</tr>
<tr>
<td>Tobacco</td>
<td>4,175</td>
</tr>
<tr>
<td>Sheep</td>
<td>165,267</td>
</tr>
<tr>
<td>Hides</td>
<td>248,025</td>
</tr>
<tr>
<td>Tobacco</td>
<td>115,674</td>
</tr>
</tbody>
</table>

Vessels which entered and sailed from the port of Monte Video in 1836, with the estimated value of their cargoes:

<table>
<thead>
<tr>
<th>Country</th>
<th>No. of Ships</th>
<th>Value of Cargoes in Spanish Dollars</th>
</tr>
</thead>
<tbody>
<tr>
<td>British</td>
<td>58</td>
<td>1,175,658</td>
</tr>
<tr>
<td>Brazilian</td>
<td>62</td>
<td>713,763</td>
</tr>
<tr>
<td>French</td>
<td>40</td>
<td>676,178</td>
</tr>
<tr>
<td>Spanish</td>
<td>15</td>
<td>311,285</td>
</tr>
<tr>
<td>Portuguese</td>
<td>13</td>
<td>18,203</td>
</tr>
<tr>
<td>Other</td>
<td>509,962</td>
<td>639,999</td>
</tr>
</tbody>
</table>

More copious particulars on the commerce of the Argentine Republic are given in Sir Woodbine Parshal's valuable book on Buenos Ayres and the provinces of the Rio de la Plata, from which these statistical facts are taken.

History.—Though Ameghino Vespucii sailed along the coast before the end of the 15th century, it does not appear that he observed the wide estuario 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 settle ment.

Sebastian Cabot was sent from Spain, in 1530, 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 entered the Paraguay, which has ascended to a point above the place where Asuncion is situated. He built also a small fort at the place where the River Ter cero, or rather the Casarcañal, joins the Paraguay, which has ascended to a point above the place where Asuncion is situated. He built also a small fort at the place where the River Ter cero, or rather the Casarcañal, joins the Paraguay, which has ascended to a point above the place where Asuncion is situated. He built also a small fort at the place where the River Ter cero, or rather the Casarcañal, joins the Paraguay, which has ascended to a point above the place where Asuncion is situated. He built also a small fort at the place where the River Ter cero, or rather the Casarcañal, joins the Paraguay, which has ascended to a point above the place where Asuncion is situated. He built also a small fort at the place where the River Ter cero, or rather the Casarcañal, joins the Paraguay, which has ascended to a point above the place where Asuncion is situated. He built also a small fort at the place where the River Ter cero, or rather the Casarcañal, joins the Paraguay, which has ascended to a point above the place where Asuncion is situated. He built also a small fort at the place where the River Ter cero, or rather the Casarcañal, joins the Paraguay, which has ascended to a point above the place where Asuncion is situated. He built also a small fort at the place where the River Ter cero, or rather the Casarcañal, joins the Paraguay, which has ascended to a point above the place where Asuncion is situated. He built also a small fort at the place where the River Ter cero, or rather the Casarcañal, joins the Paraguay, which has ascended to a point above the place where Asuncion is situated. He built also a small fort at the place where the River Ter cero, or rather the Casarcañal, joins the Paraguay, which has ascended to a point above the place where Asuncion is situated. He built also a small fort at the place where the River Ter cero, or rather the Casarcañal, joins the Paraguay, which has ascended to a point above the place where Asuncion is situated. He built also a small fort at the place where the River Ter cero, or rather the Casarcañal, joins the Paraguay, which has ascended to a point above the place where Asuncion is situated. He built also a small fort at the place where the River Ter cero, or rather the Casarcañal, joins the Paraguay, which has ascended to a point above the place where Asuncion is situated. He built also a small fort at the place where the River Ter cero, or rather the Casarcañal, joins the Paraguay, which has ascended to a point above the place where Asuncion is situated. He built also a small fort at the place where the River Ter cero, or rather the Casarcañal, joins the Paraguay, which has ascended to a point above the place where Asuncion is situated. He built also a small fort at the place where the River Ter cero, or rather the Casarcañal, joins the Paraguay, which has ascended to a point above the place where Asuncion is situated.
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, about 60 stadia, or rather more than 7 miles, south-west of Thebes. The river Asopus ran between, at nearly an equal distance from each. The Boctios, who migrated from Arne in Theasaly, did not cease from war after they had founded their town of Boctia (Thucyd., ii. 61); and it was from this first distinguished by a spirit of resistance to Thebes in her assertion of supremacy over the neighbouring country. The Platans in fact were resolved to maintain their independence, and the Thebans were determined if possible to reduce them to the same condition as the other Boctios. To prevent this, Plataia allied herself with Athens, the Lacedemonians having referred to that state so more capable of reformation than themselves (a.c. 519). This connection appears to have determined the fortunes and conduct of the Platans in succeeding times, for they were the allies of Athens at the battles of Marathon, Artemision, and Plataea (a.c. 479), when the rest of the Boctios joined the Periains, and also in the Peloponnesian War. One of the first events of this war was the unsuccessful siege of Plataia by the Thebans, and one of the most remarkable was the siege of the same city by the Lacedemonians for the refusal of the Philistion Plataia to break up their alliance with the Athenians. They held out to the last extremity, and on their surrender were put to death by the Lacedemonians to the number of 300, the rest having escaped by a route in the night. This circumstance struck the imagination of Thucydides (iv. 47), who afterwards raised the city to the ground. The citizens were subsequently (a.c. 356) restored, in the year after the peace of Antipdes. (Paus., i. 13, 3.) The city was however again destroyed by the Thebans, in a.c. 462 (Chlorin. Hist. Hel.;) and though Philip of Macedon promised to rebuild it, and its restoration was proposed on the capture of Thebes (a.c. 355) by Alexander, the final restoration of the Platans was not effected till a.c. 315, sixty years after their first expulsion by the Thebans. (Clinton's Hist. Hell., p. 356.)

PLATAEA, the generic name by which Limmus designates the Sp wrongful. [Herod., vol. xii., p. 187.]

PLATANUS. [PLAT.] PLATANUS, or PLATNINUM, an important metal, although it was not known earlier than about the middle of the last century. It was first made known in Europe by Mr. Wood, assay-master in Jamaica, who met with its ore in 1741. In 1750 he published a paper upon it in the 'Philosophical Transactions.'

The name of this metal is the diminutive of plata, silver, given to it on account of its colour, and it was originally called platina del Pinto, because it was found in the sulphurous sand of the river Pinto. It has since been found in Brazil, Columbia, St. Domingo, and in the Uralian Mountains.

Platin is separated from the sand and other matters with which it is mixed, by washing with a great quantity of water, from which the heavier parts of course subside, and these contain the ore in question.

The ore consists of irregular rounded grains, which are sometimes flattened; they are of various sizes, often very small, and occasionally they exhibit traces of crystallization; but these are probably derived from the pressure of some other metal. These grains possess no cleavage. Fracture hackly. Hardness 4'9 to 4'8. Specifie gravity 17-392. Opaque. Lustre metallic. Colour steel grey.

A. Scalice has analyzed many varieties of this ore, from which we select two examples: (1) the ore of Barbacoas, in the province of Antioquia, Colombia, and (2) that of Goro- 

Digitized by Google
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 platinum: 98

**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 solubility in cold hot, or in solution in water, no action takes place between them, but the following:

Protochloride of Platina may be obtained by dissolving the metal in aqua-regia, or nitro-hydrochloric acid: in this case the nascent chlorine dissolves it, and by evaporating the solution to dryness, and sealing under a heat of about 392°, until chlorine ceases to be evolved, 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 alkalies, potash and soda, decompose it, and separate protoplatine of platina, which dissolves in an excess of the alkalies, and yields a deep green-coloured solution.

It is composed of:

- One equivalent of chlorine: 36
- One equivalent of platina: 98

**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 ether; 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 a hydrochlorate of the bichloride; when concentrated to a moderate degree of heat, the bichloride becomes protoplatine, 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

**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 bibromite, composed of:

- Two equivalents of bromine: 156
- One equivalent of platina: 98

**Carbon and Platina** have lately been combined by Zetice; they form a black powder, which is composed of:

- Two equivalents of carbon: 12
- One equivalent of platina: 98

**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 hydrochloride of ammonia and excess of sulphur are entirely expelled; or by adding hydrosulphuric acid to protoplatine of platina. It is a grey or blackish powder of a metallic lustre, unaltered by exposure to air or water, and scarcely attacked even by boiling acids, but is decomposed when ignited with chloride of potash. It consists of:

- One equivalent of sulphur: 16
- One equivalent of platina: 98

**Sulphuret of Platina** is procured by mixing a solution of sulphur with pyrites 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

Phosphuret 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 sulphur; it is partially decomposed by heat, and completely so by roasting.

Iodised Platina may be combined.

Protodiate of Platina is obtained by decomposing a solution of the protochloride with one of iodide of potassium: after the mixture has been for some time heated, a black, heavy, viscous liquid is obtained, which adheres to the fingers like charcoal; it has neither taste nor smell; is unalterable in the air, and neither water nor alcohol acts upon it at any temperature. It may be heated to above 400° 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 nearly

One equivalent of iodine 126
One equivalent of platina 98

Equivalent 224

Bi-iodide 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 by a water-bath. It is inodorous; insipid, and stains the fingers like the protodiate, and is not acted upon by boiling water, but is decomposed at a temperature of about 240°. 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 252
One equivalent of platina 98

Equivalent 350

Borouret of Platina is obtained by fusing spongy platina with boracic acid and charcoal: the compound is hard, and slightly crystalline; when dissolved in aqua-regia, it yields chlorid of platina and boracic acid.

Seleniuret 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 crystallises in white dihydrate compounds of selenium, when the latter are heated in them.

Sylate 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 charcoal and of the crucible. A compound thus obtained was found by Berzelius to have a specific gravity of 133; it was granular and very hard; when put into aqua-regia, it was acted upon, and soon covered with a sufficient crust of silica 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 metals, or the alloys of Platina. Most metals combine with platina, but little is known of its compounds with the metals of the alkalies and earths. According to Berzelius, platina has combined with all the metals 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 metal and 2 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 volatile, and metallic platina remains. Jeannetty of Paris long employed this process for extracting platina from the native grains, and rendering them useful for crucibles, \\

Antimony and Platina during combination evolve much light. This alloy is very brittle, fine-grained, and hard. It is decomposed at a high temperature, the antimony being oxidised to the trioxide.

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 volatilised.

" Tin and Platina form 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. Faraday and Stodart have experimented with alloys of platina and steel which appear to combine in all proportions. 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 of 9·965 is obtained; it takes a fine polish, does not tarnish, and appears to be well adapted for mirrors; when 50 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.

Siver 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 and 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.

Manganese 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 parts of platina and 53 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.

Iridium and Platina. This alloy is perfectly fusible when the metallic amounts do not exceed 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 iridium renders the alloy so brittle that it cracks under the hammer.

SALTS OF PLATINA, OR OXY SALTS, consist of acids and the oxides of the metal: they are not numerous, and have been but imperfectly examined.

SALTS OF THE PROTOXIDE. 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 hydrochlorate of ammonia.

Iritis and Platina 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 that finely divided state in which it is called sulphated platina. It is precipitated by nitric acid, iron, and copper, and gives a black precipitate of sulphuret of platina with hydroxubsulphuric acid and hydrosulphates.

The alkalis decompose these salts but imperfectly, on account of the formation of double sub-salts. Protochloride of platina is also decolourised, but the action becomes of a very characteristic and intense red colour. If Protoplaphate 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.

**Protonitrile 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 bisulphuret with nitric acid. It is black, and may be combined with the alkaline sulphates, and it yields insoluble double subsalts when decomposed by the alkalis.

**Permutate of Platina** is 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 alkalis.

A numerous class of double salts, called *platinio-chlorides*, have the formula *MgCl₂·PtCl₂·xH₂O*. 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. Brand, in the following statement of the

**Characters of the Salts of Platina**.—The difficult solubility of the ammonio- and potasio-chlorides of platina, and the solubility of the corresponding sodium compounds, are very characteristic of this metal. Phosphate 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 matras, the glass acquires a strong coating of metallic platina.

All the metals which reduce the chloroide 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 effectual precipitants; they separate it in a black powder, which sometimes adheres in films to the glass.

The use of platina is 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.** [Paul. II.]**

**PLATO (Πλάτων)** was born, according to the most consistent accounts, on the 7th day of Thargelion, in Cl. 87, 3, 4, 5, 6, 7, and is said to have been of the same age and name, by which he is known, as Phidias (τῆς τῶν εὐρυφωκάς τῶν), and from his expansive forehead (πάνικας ἐκ τῶν μέτωπων); but this seems quite idle, as the name of 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 Excecestes, the father of Solon, according to the following table:

<table>
<thead>
<tr>
<th>Excecestes</th>
<th>Solon</th>
<th>Dripodes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Citius I.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Callias</th>
<th>Glaucon</th>
<th>Citius II.</th>
<th>Aristocles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Charmides</td>
<td>Perictione</td>
<td>== Aristo</td>
<td></td>
</tr>
</tbody>
</table>

It seems doubtful, however, whether Solon and Dripodes were really brothers; that they were intimate friends and connections appears from the words of Plato himself in the P. C. No. 1132.

**Timaeus** (p. 20, E.), but perhaps the claim of a direct descendent 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 hundred and fiftieth year of the Olympic Games, or, according to another account, on the third day of December, in the hundred and fiftieth year of the Incarnation of Zeus; this (as also the fables of his childhood) is, however, suppressed, and his story is continued. He is said to have been the child of a spinster named Phaidra, and to have been educated by Chilon, a friend of Socrates, who was the son of the Athenian poet Sappho, and who was a pupil of the famous philosopher Aristotle. He is said to have been brought up by his mother, who was a spinster named Phaidra, and to have been educated by Chilon, a friend of Socrates, who was the son of the Athenian poet Sappho, and who was a pupil of the famous philosopher Aristotle.

He is said to have been brought up by his mother, who was a spinster named Phaidra, and to have been educated by Chilon, a friend of Socrates, who was the son of the Athenian poet Sappho, and who was a pupil of the famous philosopher Aristotle.

He is said to have been brought up by his mother, who was a spinster named Phaidra, and to have been educated by Chilon, a friend of Socrates, who was the son of the Athenian poet Sappho, and who was a pupil of the famous philosopher Aristotle.

He is said to have been brought up by his mother, who was a spinster named Phaidra, and to have been educated by Chilon, a friend of Socrates, who was the son of the Athenian poet Sappho, and who was a pupil of the famous philosopher Aristotle.

He is said to have been brought up by his mother, who was a spinster named Phaidra, and to have been educated by Chilon, a friend of Socrates, who was the son of the Athenian poet Sappho, and who was a pupil of the famous philosopher Aristotle.

He is said to have been brought up by his mother, who was a spinster named Phaidra, and to have been educated by Chilon, a friend of Socrates, who was the son of the Athenian poet Sappho, and who was a pupil of the famous philosopher Aristotle.
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 its character. It is true, as much as any other country, so much as was observed at Alexandria in later times, that a life 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 from the great importance 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 truth of the Christian revelation. The traditions and prophecies of the East. 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 East, or to attend some of the schools; but he certainly did not go to Italy to learn the doctrines 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., viii. 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 a visit that he paid to Sicily. Ciceros account to see an eruption of Mount Etna 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 c. 385. (Ath. xii., p. 567 B; Dion. Hal. iv., v., 7; Pausan. ii., 6, 33.) In this or some other occasion it is asserted 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 Pollis, the Spartan ambassador, in whose ship he was returning to Greece, to sell him at Agina as a slave. He was bought by Anniclus 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 philosophical 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 c. 367, and Plato stayed four months in Sicily. His third journey to Sicily is placed in c. 361: it is thought 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 altogether that he obtained permission to return again to Athens, or that he was banished in the fall of 361. In c. 361, 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, whom he had sent on the same journey to Sicily. Dion succeeded in his object, but was soon after murdered (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 philosophical 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 afterwards in the house in which he had lived, both in the city and between it and the village Colonus. Plato died in Ol. 108, (B.C. 347), and was succeeded as lecturer in the Academy by his nephew Speusippus, though he had left Heracleides of Pontus, another of his disciples, as his deputy there, when he went to Speusippus with him on his second journey to Sicily. The following is the list of his scholars as given by Diogenes of Laërte:—Speusippus, Hippothales, and Callippus of Chios; Theophrastus of Chalcedon; Heracleides of Pontus; Philippos of Opus; Hestias of Perinthus; Dion of Syracuse; Amelius of Heraclea; Eratosthenes of Scepsis; Timotheus of Cyrene; Eros of Lampsis; Piton and Amnu of Etna; and Chrysippus of Antioch, which list was made by the Athenian orators Demosthenes, Hyperid, and Lycurgus, and the philosopher Theophrastus. See also the contradictory lists of tyrants and good statesmen who proceeded from the school of Plato, in Athenaeus, xi. p. 565, &c.; and Putorius, Adv. Colon., p. 1126.

The word is used 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 special construction by Alexander of Aphrodisias of Zeno of Eretria. Of the former, Aristotle (in the first book of his 'Treatise on Poets,' as quoted by Athenaeus, xi, p. 565, C) says, 'We cannot deny the name of discourses and imitations of the mimes of Socrates and to the dialogues of Socrates.' The best known of these, which were called such, are the 'Socratic dialogues.' With regard to the statement about 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 (διαλογίας) in our way.' And Aristotle describes him as 'the answering and questioning Zeno' (ανακριβοφωνος καὶ ἀποκόρος Ζήνων: 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 imitation. 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 nature of dialectic is more nearly 'to converse,' as appears from the use of the common word dialexis (διαλεξις), 'conversation,' to signify 'dialectics,' in Aristoph., Nep., 317: αὐτῷ γεγονεί καὶ τιθυμησί καὶ νῦν ὑπέρ τινος ἡ σκανδάλωσις τοῦ προφητεύον τοῦ χριστιανοῦ. A similar construction is given to the explanation of the verb 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 led to any one 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 Epicurus and Sophron: Aleamis, quoted by Diogenes of Laërte (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 minstres of Socrates, 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 it was not till he had read and imitated some of 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 though some of Plato's works were to be 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 one, and as such one that was equally applicable to all forms of that species of knowledge. As a student, he was considered as a student as well as an expounder of philosophy, as may indeed be inferred from the statement of Hermacleides of Pontus, that he was among the first to collect books and import them to Athens. (Proclos, in Tim., i., p. 28; Dog. Laert., viii. 16.) Plato's system was the peculiar system of Socrates, which he had learned during his intercourse with that philosopher. Plato was thoroughly conversant with the systems of Pythagoras, Heracleitus, Parmenides, and Zeno of Elea, and he had牢固ly abound with references to their writings, and some of his dialogues are controversial tracts directed against one or more of these philosophers; nor had he neglected his contemporaries of the Socratic school, some of whom, as Plato, had been participants in the discussions of the Athenian assemblies. He was, however, much less severely. Cicero, in the passage of his treatise ' De Republica' (c. i. 10), referred to above, seems to consider that the philosophy of Pythagoras, combined with the dialectics.
of Socrates, formed the main groundwork of Plato's philosophy: 'On the death of Socrates,' he says, 'Plato first went to Egypt to add to his stock of knowledge, and afterwards travelled to Italy and Sicily in order to learn a thorough acquaintance with Pythagoras.' He also speaks of the intercourse with Archytas of Tarentum and with Timæus the Lorizian, and procured the commentaries of Philolaus; and as Pythagoras then enjoyed a great reputation in that part of the world, Plato applied himself to the society of Pythagorean philosophers, and to the study of their system. Accordingly, as he was devotedly attached to Socrates, and wished to put everything into his mouth, he interwove the elegance and subtlety of the Socratic mode of arguing with the obscurity of Pythagoreanism, and made many improvements in learning which the Pythagorean philosophy included. 

That this is only a verbal account of the matter we shall see presently; but Coerius undoubtedly right in attributing a greater part to Plato on his own appearance. The 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 Laërtius (vii. 9-16), and some lines are very pointedly written by the orator. It is, however, not only supported by the evidence of the poets, that some future writer would confute and overthrow all opponents by adopting his sayings and clothing them in a different dress. Plato sometimes quotes Epicharmus by name (as in the Gorgias, p. 469, D., and in one passage he quotes him without any mention of his name, as in the two first passages). He is quoted, as Coerius says, as the chief poet, the one of comedy, the other of tragedy. (Theatet., 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 b), may possibly be looked upon as the predecessor of Plato in his eclectic view of philosophy. There is certainly a direct reference to Empedocles in the Sophistes, p. 242, D.; perhaps also, as Heindorf thinks, in the Lysiada, p. 214, B., though Stallbaum considers that Anacond. as is there referred to, and Hermann, in an essay recently published (Opposcul., vol. vii., p. 106), has hesitated to regard as the works of Empedocles in a celebrated passage of the Phaedrus, p. 246, B.-C.

On the whole then it is clear that Plato was well acquainted with the labours of his predecessors and contemporaries. But though he availed himself of them, and though he had borrowed some of his basic views from his great teacher Socrates, he ought nevertheless to have done great injustice to ourselves regarded merely as a compiler and systematiser of what had been already developed, because he accepted many of the conclusions of great thoughts. Plato's whole system is based upon some great 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 sense, between the world of intelligence and the visible world, was never clearly pointed out till Plato's time. It is very evident that Socrates did awaken to the".

between Socrates and Plato very nearly resembles that between 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, so much is the advance made by Plato in every great advance in philosophy; the conception must precede its articulate utterance.

Before we attempt to exhibit the method of Plato's philosophy as it appears in his writings, it will be as well to consider briefer the chronological arrangement of his dialogues, 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 can the collection of his works be a large number of different dialogues included among them, which, beyond all manner of doubt, were written by some imitators of the great philosopher. Thus, the 'Eryxias' and 'Axeochus' are generally ascribed to Plato. There is also the 'Menodora'; the 'Epomenis' 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 we 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 are the dialogues composed of the different parts, have set upon his travels, namely; the 'Leges,' 'Phaedrus,' 'Laches,' 'Hippias minor,' 'Protagoras,' 'Charmides,' 'Ion,' 'Menon,' 'Alcibiades 1.' 'Euthydemus,' 'Euthyphro,' 'Apology,' and 'Crito.' For the second class we refer those from the Poetic to the Sophistic, and from the beginning of his second journey to Sicily, namely, the 'Gorgias,' 'Thea- teteus,' 'Sophistes,' 'Politicus,' 'Cratylus,' 'Parmenides,' 'Symposium,' 'Menexenus,' 'Philebus,' 'Phaedo,' and perhaps also the 'Republic,' the 'Timæus,' and the 'Crito.' In the third class we place by itself the long dialogue on the 'Laws,' which is but loosely connected with the general system of Plato's works, and seems to be quite an extraneous part of his philosophy. However, notwithstanding this it is of the highest value to other discussions and to 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; but 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 apocryphal; there is a profusion of anachronisms, and a confused arrangement of facts, which cannot be drawn from the 'The Republic.' But with regard to the non-introduction of Socrates, such a method of dealing with the facts of the 'Laws' is not inconsistent with Plato's views as developed in the Republic. But with regard to the non-introduction of Socrates, such a method of dealing with the facts of the 'Laws' is not inconsistent with Plato's views as developed in the Republic. But with regard to the non-introduction of Socrates, such a method of dealing with the facts of the 'Laws' is not inconsistent with Plato's views as developed in the Republic.
seate 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 philosophy, and 2. the philosophical, which contains the consequence of the possibility of the conditions of knowledge; these are the 'Phaedrus,' 'Lysis,' 'Protagoras,' 'Laches,' 'Charides,' 'Euthyphro,' and 'Parmenides,' to which he subjoins, as an appendix, the 'Theaetetus,' 'Crito,' 'Philebus,' 'Timaeus,' and 'Alcibiades II.'; 2. progressive dialogues, which treat of the distinction between philosophical and common knowledge in their united application to the two proposed and real sciences, 'Ethics' and 'Physics'; these are the 'Sophist,' 'Theaetetus,' 'Cratylus,' 'Sophistes,' 'Politeia,' 'Symposium,' 'Phaedo,' and 'Philebus,' with an appendix containing the 'Theages,' 'Eristae,' 'Alcibiades I.,' 'Menexenus,' 'Hippias major,' and 'Chiron;' 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 'Sophist' and 'Politeia,' 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 'Philebus,' so the 'Theaetetus' is preparatory to the 'Philebus,' and as the 'Timaeus' and the 'Philebus,' as an approximate 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 for the arrangement of the several dialogues according to some real train of succession. According 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 (Sextus Empir., 'Adv. Math.,' vi. 16; but Plato certainly had started the idea of such a division, which is distinctly attributed to him by Cicero ('Acad. Post.,' 1, c. 5, § 19), and is capable of verification 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 philosophical 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 system of dialectics is based upon a view of the definition 'real,' which he was the first to bring forwards. The definition, he says, consists in generalisation and division, i.e. it is made either per genus or per differentiation. The 'Platonic' system is the base of all philosophy; the second is the development of the former. Consequently, as science, according to Plato, depends upon dialectics, and dialectics on the definition 'real,' in order to general scientific reasoning, one must generalise and classify ur idēa wēstwv kai érōn vinoi fýsiouj. 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 contradictions of the system of Heraclitus and the 'Eleatics.' The Heraclitean doctrine of a perpetual flux, modified into the dogma of Protagoras, πάντων μηρον ἄνθρωπος. '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 (tōsa, ὄντα), and set up in its stead a mere genealogy or becoming (γενέσεως); so that nothing could be predicated of any thing as fixed. On the other hand, the 'Eleatic' doctrine is that all is one, and that there is no multiplicity; 2, that all is one, and that there is no becoming; no change, no generation, augmentation, or decay were equally opposed to Plato. In his belief in the reality of sensation, for they absolutely deny it. Neither the reality of the whole, the reality of the individual beholding the ὄντα, 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 science 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-

a
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 politics, it will be advisable to consider the subject of the human soul, for Plato appears to have 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 the 'Republic'. From this connexion will proceed, the delineation of the soul's parts of another, and which Schleiermacher places at the head of the second class of Plato's works, the dialogues of which occupy a middle position between the elementary and constructive ones, and treat not of the method of philosophy, but of the soul her qualities and capacities, and of the powers of its parts, and of the object. 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 problem of the 'Gorgias' does not pursue the suffering being while still enveloped in the fleeting and transitory phantasms of the sense, 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 contrasted objects of contemplation. There are two ways 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 opposition to the true and false. The former is evasive; therefore it has some starting point in the other case. In the opposition which it is the object of these methods to reconcile, the antithesis of the 'Gorgias' is between being and semblance: in ethics this amounts to the antithesis of the truth of the province of being to pleasure, or pleasantable feelings, and in physics this is the antithesis of 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 celebrated sophist and rhetorician; Polus, a rich and arrogant Agrigentine, who had written a book on rhetoric; and Callicles, a rich and arrogant Lacedaemonian, who is opposed to Socrates and his friend Cheares, 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 injustice, 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 always: there is not an art which is better than that upon which there is no need of no force, and that the perceptions of a person mad or asleep are true as far as they go; for, in the first place, we have no means of proving that we are not asleep when we believe ourselves. If a man is asleep or in a dream, however, whatever we perceive, we alone perceive it, and that therefore the perception, if it is a perception at all, must be a true one. The opinion of Theaetetus, thus far established, is of no validity unless we admit that Protagoras has overthrown his pretensions to superior wisdom. Any advance in this doctrine. Socrates however conceives that Protagoras might reasonably object to this confutation as not amounting to a regular proof. In the next place then he shows that there is an art at all, and that the perception is just as it is that it is possible to remember a thing once known, and yet not to know it. He checks himself however by suggesting (p. 114, C) that this reducendo ad absurdum has been obtained by an argument in the common formula 'this or that' terms (και τὸ ἀριστοκρατικὸν) and, that there is no definition of the doctrine of Protagoras as far as it will go. Speaking then in the person of Protagoras, he begins by denying that perception (αἴσθησις) and memory (μνήμη) are the same affection (εἰδωλος). Next, he denies that he considers all men alike in wisdom. He says that some opinions may be better than others; but he denies that any are false; and having, in the name of Protagoras, found fault with himself for his mode of arguing, he invites Theaetetus to answer him in Protagoras's name. Theaetetus having reluctantly consented to do so, Socrates proceeds (p. 170, A) to refute seriously the πάντως μίσθων ἀνθρώπων of Protagoras. In the first place, he points out that almost every action of man implies the belief that there are different degrees of wisdom, and therefore that there is such a thing as opinion. Next, he shows that Protagoras himself must confess his opinion to be false, if it be conceded that most people think it so, and that they are therefore right. Again, this rule of Protagoras will not apply to the profitable, and this Socrates, after a digression on the difference between the babbling politician and the true philosopher, proceeds (p. 170, B) to prove that the resultant of all that is profitable belongs to the future, and that no one excepting the man of science can judge of the future as respecting the object of his science. These last conclusions Theaetetus admits to be decisive (p. 179, B, C); but Socrates doubts of the determination of the question. This is therefore laid out, unless the Heraclitean doctrine be also refuted. This then is the next step. In the first place he makes Theaetetus concede that all things are moved according to both
kinds of motion, i.e. change of place and change of form. Then alluding to his former distinction of τὰ σωφτὰ = τὰ αἰσθητά, and τὰ σωφτάμα = τὰ αἰσθητόμα, and to what he said about the effects of their concurrence, he shows that, because as we see in the latter, in order to perceive, no quality is required of the things perceiving anything; and that we neither can be said to perceive, nor yet not 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 ψυχή, ψυχήν, ψυχήν, the soul considered as unconnected with the senses, is the subject of essence and truth, and therefore science and sensation are different, for science is not conceivable in many of his books, says Socrates, 4. And that we must seek for science in that name, whatever it is, which is given to the soul when it is engaged in abstract speculation." (p. 187, A.) From this, Theaetetus asserts (II.) that science is right conception (καὶ ἀληθὴς ἔξω,) and that when he is driven from this, after a series of such disquisitions on the nature of false conception, he maintains (III.) that science is right conception combined with reasonable explanation (καὶ μετὰ λόγου ἀληθῆς ἔξω, i.e. ὅπερ μετὰ λόγου.) And this is discussed with reference to the different meanings 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, is science. (This is the same as) that science is possible only by the whole faculty of virtue into the four cardinal virtues, as they are called, namely (1) prudence or wisdom (σοφία), (2) courage, constancy, or fortitude (ἀνοξία), (3) temperance, discretion, or self-control (κρατος), and (4) justice or righteousness (δικαιοσύνη): and on the supposition that the whole province of virtue is exhausted by these four virtues. We cannot agree with Schleiermacher (Einleitung zum Staat, 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 not simply an hypothesis upon the part of Plato, but rather the old division of virtue (De Republ., iv., p. 427-434:—"The state, being a perfect one, must exhibit in itself the four cardinal virtues; not that every one of its citizens must exhibit them all perfectly; but that the philosophic ruler, as the state, possesses all the four virtues, courage, wisdom, justice, and righteousness, in the greatest perfection and fullness." The remaining virtue, ἀποτελεσθείν, is the virtue of the whole; it is the principle and cause of the existence of the other three virtues, and the state as a whole is to be considered as a part of the whole state, to whom was opposed, were principally dangerous from the bearing of their conclusions on political morality. The exact criterion of all materialiste 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" (Theaet., p. 187, E.) and as Sir C. Wren gained new life for the scientific manner in which he removed the ruins of the old St. Paul's, so Plato may be said to give new life to the old scientific manner in which he removed the removal of the old St. Paul's. He was of a genius and skill with which he planned and carried the new edifice, so Plato should receive the commendation which is due to him for the elaborate and searching scrutiny to which he subjected the enigmatical parts of the Socratic doctrine, and 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 longest 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 would involve the conclusion, if as an introduction to the Republic, "he formally confounds the dogma that the summum bonum is either pleasure or knowledge alone. The highest good, as is hinted in the 'Philbus,' and distinctly shown in the 'Republic,' is moral virtue; this principle is the basis of morality and of moral 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-
sorveign reason, is most beautifully and carefully worked out in
the mythus which forms a prominent part of Plato's earliest dialogue, the 'Phaedrus' (p. 246, A, seq.), where the husk is in the form of a horse, and he is borne by 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
wildly yoke-fellow (the appetite) along with it, and to induce it to leave the pleasures of the chariot's pleasure, and
they have both of them much pain and trouble with it, and
the whole object of their charioteering is lost if it contrives
to get the better of them. In this allegory the aim of the
reason, or charioteer, is the same as that of the lower faculties:
merely this obedience or subordination itself, which consti-
tutes the goodness of man; the reason endeavours, by keep-
ing under control the senses, with all their cravings for grati-
fication, to take a calm view of abstract truth, and to gaze
upon the eternal realities which are hid clothed in the
garb of space and time. This is described as if the soul, in
its state of previous existence, went the circuit of the uni-
verse in the train of the gods; if, in performing this journey,
the reason, or charioteer, could hold his steed so as to
raise his own head above the surface of the heavenly
vault, he was borne round with the revolution of the sphere,
and, in that position, though struggling and striving with
his unruly steed, he kept his head up; which is the same as the
essence of things which are collected in that super-celestial
region, and the reminiscences of which furnish the soul
with ideas after it has descended to earth and become united
with a body. Now this is carrying the definition of moral
excellence, or virtue, circle on circle. As there is no virtue of
righteousness, or moral excellence, when his will and
his appetite are subordinated to his reason; but this sub-
ordination is necessary as a previous condition, in order
that he may contemplate the objects of the reason, for our
phraseology, a man must be in a moral state before he
the possessor of such virtue and intellectual excellence; for
Plato, idea and essence are synonymous. Thus by the idea of
the good, he only means the nature and essence of good, or of the sovereign good, that is, of God, and not in the case the abstract and intellectual
thing which we form of it. In opposition to this idea or
essence, Plato uses the term generation, or becoming, by
which he means all sensible things, everything that is born
and possesses. Corresponding to this opposition of genera-
tion, or becoming, is the opposition of the sun to the environ-
on Aristotel's Phys., fol. 7, B1, supposed two worlds, the
world of matter and the world of mind, the visible and the
ideal world; the former being on the model of the latter.
Hence an idea is an essence, or object of thought, which
is the same as a mental image, and is therefore not a
world. Material essences, or substances, are not real essences,
for they are subject to generation and corruption; we can-
not predicate elon of them; they can only be said yevesetol.
Having promised, or rather reminded his readers of this
opposition of the eonon to the yevee (p. 597, B1), Plato proceeds in the following strain:—The sun is an
image of the idea of the good; for while the other senses,
such as the hearing, need nothing intermediate or additional
in order to the production of ideas, and everything else
does need the intervention of light, otherwise the colour
and the form will not be visible: this light is derived from
the sun, and the benefit which our sight derives from the
sun is analogous to the benefit which our reason derives from
the sun. It follows, therefore, that the sun must be the
intervention of light, so the reason cannot discern the
things of the ideal world without the light of truth.
Consequently, the idea of the good is that which imparts
truth to the soul of man; it is the object of the reason, and
the reason itself is true to the idea. The idea of the good is therefore
far above truth and the knowledge of truth; and as light
and the power of seeing are akin to the sun, but not iden-
tical with it, so truth and the knowledge of truth are
akin to the idea, but not identical with this idea.
The sun is also an image of the idea of the good in this, that
as the sun not merely enables the eye to see, but likewise
supplies nourishment and growth to the visible objects; so
the idea of the good not merely enables the reason to discern
and know, but likewise gives to the reason the idea of the reason
their being and reality. Accordingly, as the sun, to borrow a
phrase from Michael Servetus, is the locomotive force from which
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
wildly yoke-fellow (the appetite) along with it, and to induce it
to leave the pleasures of the chariot's pleasure, and
they have both of them much pain and trouble with it, and
the whole object of their charioteering is lost if it contrives
to get the better of them. In this allegory the aim of the
reason, or charioteer, is the same as that of the lower faculties:
merely this obedience or subordination itself, which consti-
tutes the goodness of man; the reason endeavours, by keep-
ing under control the senses, with all their cravings for grati-
fication, to take a calm view of abstract truth, and to gaze
upon the eternal realities which are hid clothed in the
garb of space and time. This is described as if the soul, in
its state of previous existence, went the circuit of the uni-
verse in the train of the gods; if, in performing this journey,
the reason, or charioteer, could hold his steed so as to
raise his own head above the surface of the heavenly
vault, he was borne round with the revolution of the sphere,
and, in that position, though struggling and striving with
his unruly steed, he kept his head up; which is the same as the
essence of things which are collected in that super-celestial
region, and the reminiscences of which furnish the soul
with ideas after it has descended to earth and become united
with a body. Now this is carrying the definition of moral
excellence, or virtue, circle on circle. As there is no virtue of
righteousness, or moral excellence, when his will and
his appetite are subordinated to his reason; but this sub-
ordination is necessary as a previous condition, in order
that he may contemplate the objects of the reason, for our
phraseology, a man must be in a moral state before he

factory. Meineke thinks that Plato's scheme for a community of property and wives is undoubtedly ridiculed in the 'Ecclesiazusae,' and adds as an additional argument for this the satirical remarks of Aristophanes upon one Aristyllus (Eccles. 646; Plut. 510), whose name, hence similar to Meineke, is mentioned by Stobaeus (viii. p. 589; Etym. 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 making some slight fun of any of their colleagues, and that 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 the case requires.

II. Plato's 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, the primitive element was water, and, according to Anaximander, it was air; according to Heraclitus, it was fire; 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 the theories of the second, or the famous two Anaxagoreans, named philosophers, recognised a supreme mind (nous) as the principle of life, which imparted motion and form to the material elements, and reduced to order the chaotic mass of primal matter. The Ionic 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 Anima, i. 5; De Part. Anim., 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 én), the universe, was God. (Aristot., Hist. Anim., ii. 12.) According as to the doctrine of the number of the parts of the world, not as, the Eleatic pantheism would have maintained, God himself, but an emanation and product of that intelligence which is the cause of all things. For this reason Plato, besides his philosophy being distinctly of the mind as of the nature of the cause. In the 'Philebus' (p. 27 B, seq.), after enumerating four kinds of being—the infinite, the limit, the mixture of these two, and the cause—and alluding to the universally received dogma that the mind (nous) is the sovereign of heaven and earth (p. 28 C), he proceeds as follows (p. 29 A):—We find that fire, water, air, and earth must naturally be in the composition of all bodies. Those elements which we find in individual bodies, those which we could not find in the universe, and this little body of ours owes its nourishment and all that it has received or possesses to the great body of the world. Now these bodies of ours are animated by souls; and from whence should they derive their souls, if the great body of the universe, which has all the same elements with them, only in far greater purity and perfection, did not possess a soul as our bodies do? Since then we admit in all bodies four sorts of being—the infinite, the limit, the mixture of these two, and the cause—how and in what manner it is that the part of the universe to which we belong that there are causes which create souls, produces health of the body, and effect cures for diseases of the body; and causes which put the soul into that condition which, in the company of all the natural causes which we have so far examined,—all of these causes having names which betokens some kind of wisdom or skill;—this being the case, we cannot but think that the whole heaven, possessing the same four sorts of beings, but possessing them pure and undepraved, has for its cause the nature of those things which are most beautiful and noble, a cause which may most justly be called wisdom and mind; and as wisdom and mind cannot be without soul, it follows that the soul and mind from the cause of the cause, and that mind is of the nature of the cause of all things. It should be remarked that Plato distinguished, both in the 'Timaeus' and in the 'Philebus,' between the aïrē, or kair (the immediate cause of the creation), and the aërosw or kairos (the efficient cause of the duration of that which effects (tò movial) differs only in name from the moving cause (aïrē), and we should be right in identifying that which effects with the efficient cause (tò aërosw)."—(Phileb. p. 162, B.)—"Behold this world! you will find that its efficient cause is a sort of composition; its moving cause, the goodness of the creator (Tim., p. 29, E), and its aërosw was the universal intelligence. Or as Philo Judaeus says (ib., p. 162), 'Behold this world! you will find that its efficient cause is a sort of composition; its moving cause, the goodness of the creator.' The mind, which thus operates as a cause in setting bounds to the infinite, and so combining the infinite with the limited, was not the deity himself, but was taken by the deity and placed in the world as a sort of essence that would enter into the deity infused into the world, and was akin to the soul existing in each individual man. The great difference between
the individual man, ζονων εκατο 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 (αναθηναι). So far as the soul of man is concerned, this view agrees well with the body of the peripatetic. 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 written or verbal form in the different ages of the world, of which it is an emanation, and remains un-dead and indestructible. In this part of the text, the views on the immortality of the soul, developed in the 'Timaeus' (πασα ἡμῖν προφορὰν, p. 72 60)). As the multiplicity of things (ἡ θέα) presumes the universal of the soul, and as the bound points to the infinite, so, conversely, there must be time as the image and product—the limitation or bound—of eternity. Thus much may suffice for a general view of Plato's physical theory, for it would not be possible within our narrow limits to enter upon a discussion of his speculations in astronomy and natural history, and of his notions with regard to the origin of evil in general (ἐπιστ. ii. p. 313, A). From this general, this the reader will easily see that the method which Plato followed in this department was 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, to reduce all to one standard to overcome the former against the Heracleoteans, 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 dialectic 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 found in vain, for the truths which had eluded the search of ages. But to proceed.

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 duty of every Christian ministry is 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 investigators. Although his name has not been so much bandied about for good or for ill as that of his scholars, he is the most useful professor the system holds, though less durable. Coleridge has said that all men are born disciples of either Aristotle or Plato (Table-Talk, p. 93): a saying which, as far as it goes, is perfectly true. It means, however, that all men are born disciples of these two. Coleridge's dictum is not far from the truth. All men who wish to claim the world, will always be adopted by those who come to the hearing of them, if their minds are akin to his; otherwise, they will have recourse to the modification of those doctrines which was promulgated 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 are so popularly held in the church today 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 none of the opinions which have been attributed to him on 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 reasoning of the Fathers of the Christian Church' (London, 1819).

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 one of P. Leonicus; it has, since issued, been the official and standard text of all Plato's works, of which eight volumes have appeared. A complete French translation of Plato's works, of which eight volumes have appeared. 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 Taylor is far from satisfying the critical reader. Professor Sydenham's has been the best attempt, but he has failed again, for he has been 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 are most of them not 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, it is not very instructive. A much more judicious and very recommend Van Heusden's 'Initia Philosophiae Platonicae. Traject, 1827, 1831. A good deal may be learned from Aesop's 'Plato's Leben und Schriften. Leipzig, 1816, though the author has advanced some inadmissible paradoxes with regard to the genuineness of a number of works unquestionably written by Plato. There is also much valuable matter in the four books of 'Prolegomena to Stallbaum's edition of the Parmenides (Lips., 1829, 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 celebrity has been obscured. These 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 Levshin, was born June 24th, 1737. 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 talent had procured him admission. He was afterwards made librarian of the church, became successively hiero-monach, prefect of the seminary, and, in 1762, rector and professor of theology. That same year was marked by an event in his life that vast number of readers has been caused to him: his visit to the St. Sergius Lavra, after his coronation, he addressed the empress in such eloquent discourse, and on another occasion preached before her. So favourable was the impression he made, that he was forthwith appointed court presbyter and preacher in matters of religion to the grand-duke (afterwards the emperor Paul), for whose instruction he drew up his 'Orthodox Faith, or Outlines of Christian Theology,' which is esteemed one of the best and most useful productions of the period. He was, in 1770, a member of the Synod, and, in the same year, a professor of divinity at the university of Moscow, where he was advanced to the see, with permission to retain the archimandrite'ship of the Sergius Lavra. With the exception of some intervals occasioned by his being commanded to convert the Armenian bishop, where he was imprisoned before the court, it was in that capacity chiefly resided, until he erected another in its vicinity at his own expense, in 1765, called the Bethania. Two years afterwards he was made metropolitan of the Russian church, in which capacity he continued the advancement of the work at Moscow, in 1801, delivering on that occasion a discourse that was translated into several modern languages, besides Latin and Greek. He died in his convent of Bethania, November 11th, 1801.

His works, printed at different times, amount in all to Vol. XVIII.-21
twenty volumes, containing, besides various other pieces, 595 sermons, sermons, and orations. Many of these are con-
sidered 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 impressively as to their
substance. Extracts from them, and portions of the finmes
sages and thoughts was published in two volumes, in 1802.
Dr. Clarke has narrated some particulars of a conversation
which he had with the archbishop, who exhibit him
somewhat en deshabille. Mr. Heber (afterwards bishop of
Caldutta,) says of him—This presage 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 favour-
able idea of him. Some of his expressions would have
rather singed the whiskers of a very orthodox man, but the
frankness and openness of his manners, and the liberality
of his sentiments, pleased us highly. His frankness on sub-
jects of politics was remarkable.
PLATÉ, River. [Mississippi, River] PLATURA. [Vizcaya.]
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 Elitmus, 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. Ed-
wards, 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, four of which occupy the median
space; the anterior-external borders of the carapace are divided by
the fissures into a great number of dentiform lobes; their pos-
terior extremity reaches to the level of the anterior border
of the cardiac region, and is continued with an elevated
line which surmounts the carapace-internal border. The
internal antennae, instead of being bent back obliquely out-
wards, are turned nearly directly forwards. The external an-
tennae are disposed nearly as in Elitmus, their basilar joint
is very much developed, and is partially lodged in the space
between the internal angle of the orbital border and the
front; but the second joint of these appendages, instead of
springing near the external border of the first in the in-
ternal orbital canthus, is inserted at a small distance from
the antennary fesset, completely out of the orbit; for the
rest, it is small, cylindrical, and presents nothing remark-
able. 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 the genus into two sections.
A. Species having the external orbital angle much more
advanced than the neighbouring portion of the latero-
anterior border of the carapace.
Example. — Platycarcinus Pagurus (Cancer Memm.,
Rond.; Cancer Pagurus, Linn. and Herbert; Cancer Am-
briatius, Olivi.).
A species of North America. M. Milne Edwards divides the
Cancerians into three great groups:
1. Cancerians Cryptopodens, consisting of the genus
Zizhra. (Ost.)
2. Cancerian Arqui, comprising the genera Cancer,
Carpiul, Zosymus, Lagostoma, Xanto, Chlorodius, Pa-
ropus, Olivia, Pseudocarcinus, Eritus, Platycarcinus (here
treated of), Pilumans, Rugellus, and Fritimia.
3. Cancerian Carcinops, consisting the genera Eri-
phi, Trapexia, and Melia.
Such of these forms as our limits permit us to notice
are illustrated in this work.

For M. Milne Edwards's notice of fossil crabs, see the
article CRAIN, vol. viii., p. 126.
Zosymus also occurs in a fossil state.

PLATYCELCUS. [Pittacherd.,]
PLATYCRINITES. [Encrinites, vol. ix., p. 392.]
Mr. Swainson, in his 'Classification of Reptiles,' places
the genus under the family Iguanidae, with the following
characters: — Long and slender body, pubescent; the finnes
bones and the skull in the internal structure of the valves.
(Chelthamania of Blainv.)

PLATYLOPHUS, Mr. Swainson's name for a genus of
comirial birds arranged by him as a subgenus of Barlia
(Barka), in the subfamily Corvinae, or Typical Crows.

Generic Character. — Bill intermediate in form between
Pango and Garrulus. Culmen slightly curved; gonys
ascending, curved. Front of the head and nostrils defended
by stiff auricular feathers. Nostrils oval, basal. Zecus
bearded. Wings rounded; the primaries not much longer
than the scapulars. Tail rounded, terminating in setace-
ous points. Feet moderate. Hinder toe and claw very
strong; the inner toe is inserted in the middle, which is short; lateral toes equal. Claws acute.

Example. Platylhopbus galericulatus (Garrulus galer-
liculatis of Vieill.).

PLATYVHAIRA, a name given by M. Milne Edwards to
a very extraordinary genus of Brachyurus crostaceos, which
is placed by him in the tribe of Calappans [Oxytomum],
connecting on one side the Calappa [Calappa] and Murria,
whilst it is also approximated by other characters to the
Carcinus. [Cran.; Platycarcinus.]

Generic Character. — Carapace very broad, tolerably
elliptical, except that on each side it is prolonged into a
strong spiniform tooth; its latero-external borders are not
plane, but rounded and angulated; its width is much
shorter than its length, and disposed as in Calappa, &c.
The orbits are oval, deep, of moderate size; and a fissure may be
marked 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 lobes. The inhalant cavities of the internal jaw-feet,
the external jaw-feet are very wide anteriorly; their that
joint, which is as long as the second, terminates by a rather
large anterior border, and presents below its anterior and
below its posterior angles a strong, incurved, and the third
dent, 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
serves as a hinge for closing, the afferent structure of the
branchial cavities, is lamellar, very large, and semilunar.
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
footing feet are very long and very much compressed;
their third joint, or femur, is remarkably large and nearby
lamellar, and the tarsi are long and styliform. The second
pair are rather longer than the second and fourth: the fifth
is much wider than any of the others. The abdomen of 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 — Platymura Gaudichaudii,
which is of a reddish colour, and three inches (French) in
length.

Locality. — The coasts of Chile.

PLATYPUS. [Onkithorhynchus.] N.B. Platypus
is also Herbst's name for a genus of coleopterous insects
(Bostriches, Fusc.).

PLATYRHYNCHUS, Desmarest's name for a genus of
Musicapedes. [Musicapin.]

Mr. Swainson remarks that in Todus [Musicapin] the
bill exhibits a long and boat-shaped appearance, toge
PLA

PLA

ther with a remarkably short tail, and delicate although lengthened legs. These latter characters are, he adds, con-
tinued to Platyrhinchus, but the bill in the latter has be-
come so short and so broad as to present a miniature resemblance to that of Eurylaimus [Muscicapidae]: the legs are long, but not so slender as to show they are not all adapted for walking.

Example, Platyrhinchus cancrivorus. 

Locality.—Brazil. (Zool. Ill., 1st series, pl. 116.)

Platyrhinchus is also M. F. Cuvier's name for a genus of Scaevola.

PLATYSTERIA, 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.]

PLATYOMUS, Mr. Swain-
son's name for a genus of the subfamily Eurylaiminae. [Muscicapidae.]

PLATYURUS, Mr. Swainson's name for a genus of Wrens. [Vestris.] But note: Platyrura is Meigen's name for a genus of digenous insects.

PLAUE, 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 of Dresden. It is built on the north-west of the town, but is sheltered severely by a waterspot 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-
someest in Saxony, and 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 Matthaei, represents a battle; his fame is not connected with his skill. Cotton manufactures are of great importance, but said not to be so flourishing as they once were. There are manufacturies 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 Plauenscher Wanzen, which gives employ-
ment, in the circles of Voigtland (of which Plauen is the capital) and of the Erzgebirge, to 30,000 persons.

Plauen was in the thirteenth century a community of the Thuringian order. The population of Plauen is now nearly 9000.

(Stein; Cannich; Engelhardt.)

PLAUTUS, MARCUS ACCLUS, 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 with respect to the purposes of 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 consequence of the celebrity, he described not only as a man of low birth, but of such bodily deformities that nature would seem to have purposely de-
signed to make his countrymen laugh at his person as well as his wit.

It appears that Plautus commenced writing comedy 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 adelies, who had the superintendence of dramatisations (Prolog. of Am-
phitruos, v. 72), and having embarked in commercial specu-
lations, he lost it all, and was reduced to poverty. Upon his return to Rome, he entered into the service of a baker, who employed him in delivering his bread on foot. While he was thus occupied 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. Ol. 145) describes them as such: 'they were the causes not as the conse-
quence of a failure in commercial undertakings, but of a great scarcity then prevailing at Rome. But these state-
ments, if there be any truth in them, may easily be recon-
ciled with the subsequent notoriety of Plautus. He had lost his property, on his return to Rome his distress was increased by scarcity and dearth of provisions. From these isolated accounts we must infer that it was believed among the antients that an early poet, with the least property, by an unlucky 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 Olympiad 145, leaving it not certain 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 b.c., but in Olympiad 145, which 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 passage of Ammianus Marcellinus, that the 'Amphitruos' 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; but the number of these was not to be by him, but either, as Varro supposed, the work of one Plautus, or, as seemed more probable to Gellius, plays of earlier Roman dramatists which had been revised and improved by Plautus, and, on account of their popularity 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 en-
titled 'Quaestiones,' reduced their number to twenty-two, which were designated Varriovianae, and which were generally acknowledged to be the real works of Plautus. L. Alcius added four others. Servius (ad Aen. i. 7) says that some authors ascribed to Plautus 90 plays, and others 100. Amidst these various statements, it would be hopeless for us to attempt to discover the real number of his comedies, especially as we have no means of compari-
tion for the times in which they were written. The remains contained among the twenty-one Varriovianae, and the names and fragments of the other and doubtful plays are of such a nature that we are unable to draw any conclu-
sions from them. The names of the plays still extant are: Amphitruos, 'Asinaria,' 'Aenardia,' 'Capsicius,' 'Cequius,' 'Casina,' 'Castellaria,' 'Epipicus,' 'Bacchides,' 'Moselitaria,' 'Menechmi,' 'Miles gloriosus,' 'Mercator,' 'Pseudolus,' 'Poenulus,' 'Pens,' 'Rudens,' 'Stichus,' 'Trinummus,' and 'Metheus.' The delay of Plautus is the Videolus.' 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 antients themselves. L. Alcius Stilo (Quintilii, x. 1) said that if the Muses were to speak Latin, they would adopt the language of Plautus, for the purpose of discovering some faults, 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, 370) indeed, who was both a sound critic and a great poet, seems to speak with contempt 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 society of his own age, which however were a very imperfect standard for estimating the manners de-
scribed by a dramatist who wrote more than 150 years before him. As for the inharmonious verses of Plautus, they may be excused on the score of the age, in 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 them. 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)
but not complete. English translations were published, in 1716, by Eckard (comprehending the 'Aphoritus,' 'Epidicus,' and 'Rudens'); in 1754, by Cooke; and in 1827, by Coiter. In the last of these translations 'Aphoritus,' 'Epidicus,' 'Menachenix,' 'Meronator,' 'Pseudolus,' 'Trimnemus,' and 'Rudens,' the objectionable passages are omitted. There is an excellent translation by Bonnel Thornton, 'The Comedies of Plautus translated into anglo-saxon verse,' London, 1767, 2 vols. 8vo. It was continued by Richard Warner, vols. 3 and 4, London, 1772, 8vo; vol. 5, London, 1774, 8vo.

PLAYFAIR, John, was born at Benvie in Forfarshire, in March 18, 1728. His father was Captain of St. Andrew's, and one 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. Andrew. 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 the college of St. Andrew's, that Playfair accompanied his father, written during his undergraduateship, 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 seniors.' If these reports might be more showy, and the kind 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 old, he distinguished himself as a candidate for the professorship of mathematics in Marischal College, Aberdeen. The examination was a strict one, and lasted eleven days, some say fourteen. The judges were two of the clerical board members who had been judged to have excelled him, namely, the Rev. Dr. Traill, 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 resorted 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 his duties and prospects in the clerical line as hopeless, and in 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 office. He had not been in the parsonage many months when his younger brother's time was chiefly occupied during 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 theory and a more mature investigation than can be attributed to the generality of 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 property common to the measures both of ratios and angles; 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.' (Pp. 349-354.)

A subject involving difficulties 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 occasion he made the acquaintance and acquired the friendship of that astronomer. His investigations upon this subject are contained in his 'Account of the Lithological Survey of Schehallien,' published in the 'London Philosophical Transactions,' vol. xxi, p. 395, 1766.

He resigned his living, in 1782, to superintend the edu
improving as long as he thought fit, without risk of destroying the proportions or injuring the harmony and unity of the whole. He was not waiting for favourable moments of peculiar acclivity. In his conversation, so far was I 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 the form of speech and most quiet and indifferent manner; so that the profoundest remarks and subtlest observations were often dropped, not only without any solicitation 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 possessed much value. In 1808, Review of Mudge's 'Trigonometrical Survey,' v. 1809; 5.; Review of Mechain and Delambre, 'Base du Système Métrique Décimal,' ix., 1807; 3.; Review of Laplace, 'Traité de Mécanique Céleste,' x., 1809; 4.; Review of 'Le Comptes rendus par l'Institut de France,' xv., 1809; 5.; Review of Lambton's 'Indian Survey,' xxi., 1813; 6.; Review of Laplace, 'Essai philosophique sur les Probabilités,' xxiii., 1814; 7.; Review of Baron de Zach, 'Attraction des Montagnes,' xxxii., 1816; 8.; Review of 'Kater on the Pendulum,' xxxiii., 1818. The whole of these are reprinted in the fourth volume of the collected edition of his works, published in Edinburgh in 1822, in 4 vols., 8vo., to which is prefixed a memoir of the author by Dr. James Stephen. In 'Encyclopædia Brittanica' he contributed the articles 'Astronomy' and 'Physical Astronomy,' and an incomplete 'Dissertation on the Progress of Mathematical and Physical Science' in the 'Recent and Lately Published Articles in Europe.'

The proofs of this and other articles, of which the time of his death. His contributions to the 'Transactions of the Edinburgh Royal Society' are: 1. 'On the Causes which affect the Accuracy of Barometrical Measurements,' i., 1788 (Works, iv.); 2. 'Life of Matthew Stewart,' i., 1788 (Works, iv.); 3. 'Remarks on the Astronomy of the Brahmins,' ii., 1790 (Works, iii.); 4. 'On the Origin and Investigation of Prisms,' iii., 1794 (Works, iii.); 5. 'On the Trigonometry of the Brahmins,' iv., 1798 (Works, iii.); 6. 'Theorems relative to the Figure of the Earth,' v., 1805 (Works, iii.); 7. 'Biographical Account of the late Dr. James Hutton,' v., 1805 (Works, iv.); 8. 'On the Solids of greatest Attraction,' vi., 1806 (Works, iv.); 9. 'On the Progress of Heat in spherical Bodies,' vi., 1812 (Works, iii.); 10. 'Biographical Account of Dr. John Robison,' viii., 1815 (Works, iv.); 11. 'On the Naval Tactics of the late John Clerk, Esq.,' ix., 1821 (Works, iii.); 12. 'On the Planimeter and its Application to the Measurement of Geometrical Surfaces,' Edin., 1796, 8vo.; it contains the first six books of Euclid, the elements of plane and spherical trigonometry, and a supplement on the geometry of solids and figures in their quaternary orders, and has been used in all the secondary editions since it ceased to be used as a text book in the university of Edinburgh.

1. 'Outlines of Natural Philosophy,' Edin., 1812 and 1816, 2 vols. 8vo. This contains the heads of lectures delivered by the author at the university of Edinburgh. Merely the enunciations of the several propositions and the formulæ as adapted to practical application are given, but reference is made to other works, where the demonstrations will be found. The first volume comprises statics, dynamics, hydrostatics, hydraulics, and pneumatics; the second refers wholly to astronomy; a third volume was contemplated to comprise optics, electricity, and magnetism, but was never executed. The collected edition of Playfair's 'Works,' the articles 'Playfair' in Brewer's 'Cyclopedia of Authors,' and the 'EncyclopædiaBrittanica'; the Annual Biography and Obituary, 1820, iv., pp. 371-398; Chambers's 'Biographical Dictionary of eminent Scotchmen,' vol. iv.

PLA. [THEATRE]

PLEA. [PLEADING]

PLEADING at Common Law. Pleadings, or the allegations of the parties are made by a memorandum or technical language. In order that a correct decision may be made upon disputed rights, it is necessary that the points to be decided should be clearly ascertained, and this is effected by the system of special pleading, by which the parties point in their pleadings, and are permitted for decision, unencumbered with extraneous matter.

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 same manner as an action by the writ, by the court, is authorized to proceed without royal interference. This writ then, after issue of chancery, and was called the original writ, by which it was distinguished from process issued, after the commencement of the suit, by the court which had authorized the court to take 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 to the proceeding against him, 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 could be one of these terms, and was used to denote one of several distinct matters of complaint comprised in the same declaration.

Within a certain number of days, varying according to circumstances, after the declaration of the particular day, 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 charge contained in 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 questions 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 have no professional knowledge of the sort. To this severance is due the facility by means of the discovery of the facts, and to the severity of the rules imposed by that facility, the business of the system of special pleading is probably indebted for its excellence.

When called upon to plead, the defendant has several answers 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 cog-nitio actionem, or confession; in the latter, upon his default, or, as it is termed, by nil dicit, 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 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 has not sufficiently supported the defendant in pleading aloud, 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 the whole declaration;—this was called pleading the 'general issue,' which is now permitted in 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 to bring the action 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, the plaintiff is limited to an admission of a topic 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 in both cases, the court, if the court, is understood to proceed without royal interference. 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 which it seeks to disprove, and which the defendant in P.L.E. often called 'special pleading' introduces some new fact or facts, the effect of which, if true, is to show that notwithstanding the facts alleged in the declaration, the plaintiff's right to the action is not established. 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 as to the truth of the matter therein alleged, and is more commonly called 'special pleading.'

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 plaintiff must prove his case on the affidavits or on the oath of the prosecution, and pronounce a judgment according to the confession, or one consequent upon the default. If the defendant has pleaded in abatement, the plaintiff either acquiesces in the action without incorporating any new fact, and then the judgment is that of the defendant, 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 if its truth should be controverted on the other side. This is called 'tendering an issue.'

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 that plea as a demurrer. If the defendant joins in the 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 over (a defendant oyer), in other words, that he plead 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 joint 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, not that the defendant answer over, but that the plaintiff recover his demand against the defendant.

If the plaintiff demurs to the plea in abatement, 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, and contains sufficient matter to support the plea; or he adds new matter by the aid of a new law,' or a question between the parties to be decided by 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; former et quorem inde fidelis,' whence this step is called 'adding the replication.'

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 confessing 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 join issue and go to trial before a jury; but when, instead of taking issue, new matter is pleaded, the adversary has the option of taking issue upon that new matter, of confessing and avoiding it, or of demurring to it. As the pleadings may thus go on through several more stages, names have been devised for those which most frequently occur, and these names are used to denote their object:

If the defendant's replication is called a rejoinder; the plaintiff's answer to the rejoinder is called a surrejoinder; the defendant's answer to the surrejoinder is a rebuttal; and the plaintiff's answer to the rebuttal is called a final replication. These proceedings might go on ad infinitum, but for a very salutary rule which forbids a party from alleging anything inconsistent with, or
even not corroborative 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 strict limits by which those who are in the capacity of 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 such misapplication is to prevent the plaintiff from effecting his suit by 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.

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. In such a case where a party to a suit of law can only state his case at law by a form of question of law, a decision may be obtained by submitting the matter to the opinion of the court after argument upon demurrer, without the trouble, expense, and hazard of a trial. A v. A.

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 Nervardus in the courts which branched out of it, appear to have been conducted vivâ voce in the French language, by Norman advocates called 'cautours.' After a discussion before the court as to the proper form of pleading [SAXEJUTA] before the judges, the pleadings were made under oath by the matter ought to be at law, for the mode by 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 entries 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 arrangement defective pleadings were corrected and amended 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 cases of pleading, to comply with the rules of procedure with regard to formal objections. By the late rules all pleadings must be delivered by the one party to the other. (Blackstone's Comm.: Report of Comm. Law Comm.)

PLEADING IN EQUITY. The following remarks may serve to show how far Pleadings in Equity differ from Pleadings at Law, from which they are derived; and they may be taken as supplemental to the article Equity, in which a reference is made to this article. Some little repetition can hardly be avoided.

The Answer in Equity differs materially from the answer at Law, in being upon oath, except in the case of persons who have the privilege of being examined in the capacity of parties, and the plaintiff may use the whole of the defendant's answer as evidence against him at the hearing of the cause, or such integral part of it as he may think proper. He may also, by means of the admissions contained in the answer, obtain the inspection of books, papers, and writings in the defendant's possession, which support his (the plaintiff's) claim, and he may use them as evidence at the hearing of the cause. The defendant, except on the question of costs, will make no use of his own answer, further than in showing what his defence is; and he must support this defence by evidence, just in the same way as the plaintiff must prove those parts of his case which he cannot prove by the answer. Any number of plaintiffs may join in a suit, if they have all a common interest, however unequal in value, in the subject-matter of the suit; and a common interest means such a legal or equitable title to the subject-matter of the suit, or to some part of it, as will entitle them to a decree which shall affect the defendants. All the plaintiffs in a suit are considered one, as appears from the general rule that a suit is abated by the death of a plaintiff or the marriage of a female plaintiff; and the same rule as to the common interest in the subject of the suit cannot join as a plaintiff with one who has. But the suit is a different suit against each defendant, for each defendant may answer separately to the bill; and no defendant is affected in any way by the answer of a co-defendant. If a defendant to the suit abates as to him, but continues as to the other defendants, though it is nearly always necessary to restore the integrity of the suit by making the personal representative or the heir of the deceased defendant a party to it.

The writ of Subpoena is the original process by which a party is brought before the court. This writ formerly required the person to whom it was addressed to appear and answer the complainant's bill under a penalty of 100. The present form of Subpoena requires the person to whom it is addressed to appear and answer 'upon pain of an attachment issuing against his person, and such other process for contempt as the court shall award.' Those who have privilege of peerage are required to appear and answer by a Letter Missive from the lord chancellor.

Every person who files a bill is entitled to have a subpoena, and the person who has been served with such subpoena is bound, at a certain time fixed by the court, to demur, plead to, or answer such bill. The origin of this writ of subpoena, or at least the adoption of it in a court of equity, is usually attributed to John Waltham, Bishop of Salisbury, master of the rolls in the reign of Richard II.

The bill is briefly and sufficiently defined to be 'a declaration in writing, showing the plaintiffs grief, and the wrong which he supposes to be done unto him by the defendant, and what damages he sustains by occasion thereof, praying process against him for redress of the same.' (West, Simuleography, 194, ed. 1622.) 'And first the matter of every bill ought to be true. Secondly, the same ought to be stated in a clear, distinct, and obvious manner, 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 forms thereof, and for the matter, that it be such as is executable in this court; which being otherwise, may be dismissed thereon.' (West.)

A bill then is a declaration in writing of a complainant, or of several complainants who have such a common interest as may be made by one party to the other. (Blackstone's Comm.: Report of Comm. Law Comm.)

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 of the grievance, or the cause of action, in 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 plaintiff's prayer, should be sufficiently alleged. This rule is of great value to the 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 admittance from the defendant, or they contain such a fact which in itself is new, the plaintiff wishes 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 all such admissions as, if admitted or proved, would sustain the plaintiff's claim against the defendant. Another object is to discover what defence the defendant will make. The main purpose of the charges is to enable the defendant to see from the beginning what is in reality called discovery, that is, evidence 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 oftentimes is entirely false, and is invented by the plaintiff for the purpose of seeing whether he cannot extract some evidence favourable to himself from the defendant. The plaintiff may invent or suggest as much false matter in it as he pleases, but he cannot, because of that kind of wish that, if true, would give him a right to that 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 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 compel an answer, incidentally may obtain the discovery, that is, 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 bill, as far as it extends in its nature. 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 confession and avoiding, or by denying and traversing the matter alleged thereto.' (West, 187.) Thus it appears that an answer in equity is in form 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 no answer, then, "in voluntarium" as the law was 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 thereafter issues of fact and law are decided ad faciendum me illorum (sic) responsuum.' (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 is sufficient. Whenever the plaintiff pleads to the answer, he is bound immediately to answer the bill in such way as he shall think best for his defence.

A defendant in equity needs little explanation further than what has been given. [Equity.] When it is a de-
Pleasings 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 bill, and confesse 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 a reply to the plaintiff to maintain 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 his answer and replication, and confesse and avoid, deny or traverse every material part of the plaintiff's replication.' If the parties be not at issue by reason of some new matter disclosed in the defendant's rejoinder, the plaintiff's main rejoinder is made to the rejoinder of the defendant's rejoinder. The words 'the plea thereupon' in the above definition are used merely for the purpose of adapting the pleadings for insertion in the formula; for the Condemnation in the formula was conditional; that is, if so and so is proved, then make such and such a decree against the defendant; and if not proved, dismiss the defendant.

Pleasings used in this country is derived from bat of the Romans. In Bracton's work, the fifth part, which is entitled 'De Exceptionibus,' occupies the same place in his treatise as the same matter does in the Institutes of Gaius and of Justinian, and the terms used by Bracton are those of the Roman law; indeed, the whole work of Bracton follows the method and order of Justinian's Institutes. A comparison between the Roman and English procedure in equity is made in Gilbert's 'Forum Romanum.'

After the Legis Actiones among the Romans fell into disuse, the mode of procedure was percornuas, the nature of which is fully explained by Gaius (iv. 99, sect. 6). The Dismonstratio was that part of the formula which showed the matter upon which the plea was founded; the Intention contained the demand; the Adjudicatio gave power to a judex to decide on the matters in dispute; and the Condemnation empowered him to make a decree in favor of the plaintiff, or to dismiss the defendant, according to the evidence produced before him. The formula was a proceeding in jure, that is, before the praetor, and it contained the instructions to the judex, to whom, according to Roman practice, the investigation of the facts and the ministerial duty of pronouncing the decree were entrusted. The answer of the defendant to the plaintiff's claim was called Exceptio, and exceptions were either peremptories—in bar, or distatiors—in abatement. The plaintiff might answer the defendant's plea by his Replication, and the defendant might answer the Replication by a Duplicatio, to which the plaintiff might reply by a Tripliation; and the practice of all such pleadings, says Gaius (iv. 129), 'has been so ordered as not to go beyond the vestiges of the multipurpose character of the matters in dispute.'

One example may be sufficient as an instance of the Roman pleading. 'If an argentarius sue for the price of a thing sold by public auction, the form of the defendant's plea may be: 'That the seller has done (or provided) (i) the thing which was purchased has been delivered to him; and this is a good plea (exceptio). But if the conditions of sale were that there should be no delivery till the money was paid, the argument is: put in a replication to this effect, submitting to the plea, unless (nisii) the conditions of sale were that the thing should not be delivered to the purchaser before he had paid the money.' (iv. 126.) The words 'the plea or the thing which was purchased' are introduced merely for the purpose of adapting the pleadings for insertion in the formula; for the Condemnation in the formula was conditional; that is, if so and so is proved, then make such and such a decree against the defendant; and if not proved, dismiss the defendant.

Plecoetus. [Chiroptera, vol. vii., p. 25.]
Plectrophanes. [Fringillidae.]
Plectrophorus. M. de Fusacius's name for a genus of Testiculae, a group of small, sluggish-like animals (Limax), carrying their tails, and at a distance from the buckler, a kind of small conical shell; but Cuvier observes that they are only known from the not very authentic figures of Pavan.
Plebius, Plebes. [Rom.]
Pledge is a thing bailed (delivered for a temporary purpose) [BAILMENT] as a security to the bailee for the performance of some engagement on the part of the bailor. When the pledge is for a debt, more especially where it is given to secure a loan at interest, it is commonly called a pawn. [Pawmocker.] In baillments the degree of care required from the bailee varies according to circumstances. When the bailment is for the sole benefit of the bailee, he is bound to use the greatest care, and is excused by nothing but unavoidable accident or irresistible force. When the bailment is for the mutual benefit of bailor and bailee, the latter is bound to use the same care as is necessary to a prudent man usually does of his own. When the bailment is for the sole benefit of the bailor, it is sufficient if the bailee keep the goods bailed carefully as he does his own, however negligent he may be. Different writers on the law of bailments refer the contract of pledge to each of these divisions. Perhaps the conflicting opinions may, to a certain extent, be reconciled by distinguishing between the different objects which a pledge is designed to produce. The engagements which it is intended to protect. First, the pledge is sometimes, though rarely, given for the sole benefit of the pledgor, where, after a contract is completely made, one party gives to the other a pledge for its performance. Evidently, which is the primary object of the pledge, may be for the mutual benefit of both bailor and bailee, in the case of a loan of goods on hire or of money at interest, accompanied by a pawn, in which case the pawn gives no more to the
bailie, 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 of procuring some other advantage to the bailor only. It would appear that in the first of these cases the debt was originally intended to be secured by the legal consequences of slight negligence; in the second, for the consequence of the want of ordinary care; and in the third, for gross negligence only.

Now, if the bailor desire to return the pledge and its increments, if any, 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 which he has occasioned by doing anything inconsistent with his duty as pledgee, or has refused to do his duty. When the whole amount of the debt or duty therefore is tendered and refused, and the pledge is obtained, 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. By the act of pledging, the pledgee impliedly warrants that the property is his 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 an agreement in writing where there was no such contract in fact or by operation of law, as by the acceptance of a higher security without an express stipulation that the pledge shall continue. To protect which the pledge is given, be performed within the stipulated time, the pledgee may sell, upon giving due notice to the pledgor. If no time is stipulated, the pledgee may give notice that he requires a present full payment 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 it has engaged to resort to the pledgee only, or to look to it in the first instance.

Though the pledgee may sell, he cannot appropriate the pledge to himself upon the default of the pledgor; nor is he to a liberty to use it without the permission of the owner, expressed or clearly implied. Such an implication arises where the article of a nature to be benefited by or to require being used, in which latter case the use is not only justifiable but indispensable to the discharge of the duty of the pledgor. (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 personal security for another's debt, and now denotes a thing which is a security, and generally for 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 movable 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. The word hypotheca (nuda conventio) that a thing shall be a security to a creditor for a debt, and the thing remains in the possession of the debtor. The word hypotheca (nuda conventio) 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, 25); and as moveable things would for obvious reasons be most frequently delivered, a notion was established among some Roman lawyers, aided by Latin usages, that pignus applicable 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 hypotheca in English law is still used to express the mortgage of a ship or its 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 cessatio, sub leges remanuensationis, or sub fiducia; and the borrower could proceed against the thing 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 power 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 action in rem against any third person, and therefore no sufficient security for his debt. The praetor's edict found a remedy for this by enjoining the debtor to give his servitium as servitium, 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 servitium servitum, also called hypothesia, gave to the hypotheca the full character of the pignus.

Thus the Roman law recognised the pignus, which arose from the contractus pignoris, and the hypotheca, which arose from the pactum hypothecae. But there were other cases which in the Roman law were considered cases of pignus.

The pignus praeostior arose when a creditor, by a judicial decree, was allowed to enter into possession (mittetatur in possessionem) of either of the whole property of a debtor or any part of it, as prescribed by the promissory note, in order to secure the debt. It has been conjectured that this kind of pignus owes its origin to the old pignoris capio. (Gaius, iv, 25. 8c.)

There was also the tactus hypothecae, which was founded on certain acts. In the case of praeda rusticana, 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 to the proprietors of a house, the building became a pignus for the debt.

The creditor, though in possession of the pledge, could not use it or take the profits of it without a contract to that effect, which was called annulaturis, or mutual use. If he took the profits, he had to pay them when his 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 past, the creditor had the right of selling the pledge and of 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. Original perhaps he could only have this right of sale by express contract, but subsequently the right to sell (suis distribendi sive vendendis) was an essential part of the contract of pledge. Though the creditor could not sell the thing pledged in his own name, he could transfer ownership of the thing to 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, although 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 even held to be inadmissible if there is a sale to the original grantor that is, a condition by virtue of which the thing 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, and also after satisfying 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. The plural pignus, or hypotheca, was introduced by special laws, which gave a preference to certain persons and claims, independent of the order of time; and a constitution of Leo gave a priority to a pledge which was made at a lower price, and the same thing was given to a procuration (i.e. confectum), or by a private instrument attested by three witnesses, over every other pledge which was to be proved by any other evidence. This law was intended to prevent fraudulent agreements by which a pledge would be annulled.
Where there were several creditors, he who had the priority over all was entitled to sell and pay himself; the surplus, if any, belonged to the creditor who was next in order, and so on till all who had priority should have been paid. If a creditor was posterior in order of time, wished to stand in the place of him who had the priority, he could do so by paying him his debt and he then occupied (succeed) the same place and had the same rights as the original creditor. The doctrine was founded on the assignable character of a pledge, for though the pledgee was not the owner of the thing, and could only sell it in the manner already mentioned for him, he could transfer to a second pledgee the jus vendendi when the second pledgee was excluded from such right by special contract. (Dig., 20, tit. 3, s. 3.) When a subsequent creditor advanced a sum of money which was applied to the preservation of the thing pledged, for instance, for the purpose of repairing a ship, he had a priority over creditors of earlier date, on the ground of his having by his loan secured the thing. (Dig., 20, tit. 4, s. 5.) The same rule, perhaps somewhat more limited, prevails in our own law as to money lent on the security of a ship.

As the pledgee remained the owner of the thing pledged, he could of course sell it, but the purchaser took it subject to the pledge. The creditor who was not the owner of the pledge was answerable for any damage that befell it owing to dolus or culpa, that is, fraud or neglect, but he was not answerable for unavoidable loss.

A pledge was determined in various ways; by the destruction of the thing by the creditor releasing the debtor, by the debtor paying the debt, and in other ways. When the debtor offered the money to his creditor, he was entitled to have the pledge restored to him. This might be obtained by action in pignoratio, which was an action in persona, and also lay for damages done to or sustained by the thing, or for the surplus of the money if the pledge had been sold by the creditor. The creditor had a contraria pignoratio acito against the debtor for expenses incurred as to the pledge, for any fraud in the matter of the pledge, as passing off base for better metal, and in some other cases.

The Roman law of pledges has been treated by various writers at great length. A compendious view of it is contained in Beveridge's 'Institutes.' Juris Romani,' Slesvic, 1822; in Marzoll's 'Lehrbuch der Institut.' Röm. Rechte, Leipzig, 1839; and in Aylios's 'Law of Pledges or! Fairns,' London, 1732; see also 'Dig.' 20, tit. 1, sec. 13; tit. 7; 'Instit.' in, tit. 6; 'Codex,' tit. 14, &c.

PLEDGING, CUSTOM OF, derived from the French 'pledge, a surety or gage. The expression I'll pledge you, in drinking, is deduced by some of our writers on popular anomalies from the times when the Dames were in possession of England. The Englishman is said to have been house of the people to seize the moment when a native of the island was in the act of drinking, to stab him with a knife or dagger; whereas people could not drink in company unless some one present would be their pledge or surety that they should receive no harm. (Brompton; Sir Richard Baker's 'Chron.' edit. 1670, p. 316; Henry, Hist. Great Brit., 4to, vol. ii., p. 539: see also Eric Pontoppidan's Gesta et Vestigia Dnor. extra Daniam, vol. ii., p. 289.

Others state the custom to have taken rise from the death of King Edward the Martyr, son to Edgar, who, by the contrivance of his stepmother Eadfrida, was stabbed in the back as he was drinking.

Brand thought the expression meant no more than that if you took your cup or glass, I pledged myself to you that I would follow your example. (Brand's Popular Antiquities, vol. ii., pp. 233-234.)

PLEIADERS, name from the Greek 'pleios, more, and enege, new.' Mr. Lyell wishes to characterize the upper part of the tertiary strata. There are in his view, the new, and newer Pleistocene formations, and some have used for the latter class the expression Pleistocene, or most new.

PLEIODON, Conrad's name for the genus Iridina of Lamarck. (Staude.)

PLEIFONE, Spen's name for a genus of Dorsibranchiata (Amphinomus, Bl.), with the same tentacles as Chionia, Sav., have branchiae in the form of tufts.

Locality.-The Indian Seas, where some of them grow to a large size.

Example, Pleione carunculata (Terebellar carunculata, Gm.)

PLEKOCHIELUS, the Rev. Landsdowne Guilding's name for a genus of Papuader (Guild.), Bulimus of authors.

Generic Character.—Animal hermaphrodite. Body corrugate, heliciform; head bululate; tentacles four, the two longer ones with ovoliferous terminations; mandible very lunate, the oscula transverse, the triangular appendage cutaneous. Intermittent organ retractile, at the root of the right greater tentacle. Mantle performed by a common foramen. Ova few, large, with a calcareous shell or crust.

Shell barely umbilicate, dextral, oval, spiral; the spire elevated, but oblique, the two last whors largest, ventricose. Aperture entire, elongated. Columella with a single plait, which is cavernose-inflex. Lip thickened, marginate. (Guild.)

Example, Plekocheilus undulatus.

Description.—Body olivaceous-black, foot pallid beneath; tentacles white at the apex; eyes black.

Shell stout, turgid, plaited longitudinally, indistinctly striated transversely, ferruginous chestnut, with oblique brown undulated bands; whorls five.

Eggs oval-elliptic, indistinctly corroded, numerous, large, glutinously deposited in a heap, and joined by a gelatinous thread; at first yellowish, shining, afterwards (when dry) pearly-calcareous.

Young pallid, the shell diaphanous, prettily corroded, and of a silky lustre, no suture, and the lips simple. The adolescent shell subdiaphanous, the bands more distinct. The old shell covered with a glauco-brown, thick wrinkled epidermis, the bands evanescent, often deeply corroded. (Guild.)

Mr. Guilding states that this fine species occurs in immense numbers in the forests of the island of St. Vincent, generally withdrawn, but sometimes even copulating in the day-time. The ova are agglutinated to the vaginating leaves of the Tillianus, which, from holding water, secure a damp atmosphere at all times. The lately exuded shell long stood in Mr. Guilding's cabinet as a non-descript Saccinna with a depressed spire. He at last traced it to oob, and from the examination of this and the young shell of Bulimus undulatus, he cautious the zoologist against hastily separating such small shells as do not bear on the lip some positive mark of maturity. In the young Plekochielis he observes, the whole shell is void of striae, and is beautifully corroded on its surface, the pleurosc being smooth and distinctly marked as they are added by the first operations of the mantle. In the young of the other snail, he observes, are seen numerous fine longitudinal and transverse striae, which it will be in vain to look for in the parts added by the animal as it advances in strength, a circumstance that would have led to the multiplication of species, had not specimens been discovered in various stages. (Zool. Journ., vol. iii.)
instances already before the public of the Professor's diligent research and acute observation, has brought the history of the Ichthyosaurus and Plesiosaurus down to the present day, throwing light upon many points which required elucidation, and adding to the catalogue of the genus and both genera, after he had visited the museums of this country and of the Continent.

Professor Owen characterizes the Enaliosaurias as vertebrate, 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 Enaliosauria were fitted more especially for a marine life. The proof that these animals lived in the atmosphere air immediately, is, he observes, 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, was the unannealed condition of the elementary ossaceous pieces of the occiput and other cranial bones, of the lower jaw, and of the vertebral column: the laws of organic coexistence justify the conclusion, 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 Enaliosaurian characteristics, appear to exist in the absence of all those distinctive articulations of the bodies of the vertebræ,—the position of the nostrils at or near the summit of the head; their separated hemaphyses; the numerous short and flat digital bones of the fore and hind extremities modified for swimming as are those of the marine Chlorimia of the present day, and, in a less striking degree, the feet of the Crocodiles among existing saurians, those reptiles only, in the opinion of the Professor, which can be regarded as true Enaliosauria. A combination limbs fitted for swimming with the cranial and vertebral characters above defined.

The characters of the genera Plesiosaurus and Ichthyosaurus, the types of the two principal modifications of the anatomical structure offered by the Enaliosauria, 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 cranial, 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 Ichthyosaurus 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, so that the posterior end of each vertebral body is inserted under the part of the body, but this character is not constant. The cervical vertebrae of the Ichthyosaurus generally present the centrum, the neurapophyses, and the ribs in a separate or unannealed 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

* Professor Owen divides the parts or processes of a vertebra into apophyses or those parts which are independent of the segment in which they are included. The transverse processes, or those which shoot out as continuations from three independent constituents.

**"Plesiosaurus," the Rev. W. D. Conybeare's name for an extinct genus of an extinct family, the Enaliosauria, and first described by him, with the assistance of Mr. De la Beche, in the Transactions of the Geological Society of London, in 1821.*

A restoration of the skeleton, together with that of Ichthyosaurus, was given by Mr. Conybeare in a subsequent volume of the same Transactions (1824), from an almost perfect specimen of Plesiosaurus dolichodes, and the accuracy of this restoration is still universally acknowledged. This genus is the Halsdracon of Wagner.

Since the article Ichthyosaurus was written, Professor Owen has made that part of his Report on British Fossil Reptiles which relates to the Enaliosauria, or 'Lizards of the Sea,' to the British Association for the Advancement of Science.

---

* *Fed. Trans., vol. v., p. 506, lst series.*
* *V. I., p. xl., 2nd series.*
Pliosaurus 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 lower to the higher level: the transverse processes of the cervical vertebrae stand boldly out as a true transverse process from the upper side of the base of each neurapophysis. The transverse processes of the sacral vertebrae subside to the level of the neurapophyses: and as the cervical vertebrae recede from the trunk, which, as in the neck, represents or takes the place of the transverse process, gradually descends, and passes from the neurapophyses to the sides of the centrum, but is not divided by the longitudinal septa in the manner of the cervical vertebrae: but it must be borne in mind that this groove is more marked in some species of Pliosaurus than others; and indeed Professor Owen has seen Pliosaurus cerasurgens in the collection of the British Museum. The dorsal vertebrae of the skull of the crocodiles are, he remarks, reduced to very small size in consequence of the expanded form and oblique position of the tympanic bone, but in the Lacertian Sauria it, as a rule, the tympanic bones are as wide as they are in the Pliosauria, if not wider.

Professor Owen describes the parietal bone as strong and tridentate, consisting of a median piece corresponding in the normal crocodiles with the coronal suture, and a transverse elongated process, formed, as it were, by a bifurcation of the posterior part of the median piece; and in a young specimen of Pliosaurus macrocephalus, in the collection of the British Museum, he found the parietal bone divided into the two parietals still distinct. In older specimens of Pliosaurus he always found it obliterated; affording evidence to justify the description of the parietal bone as single and tridentate. The Professor proceeds to notice the median portion of the parietal bone as offering two modifications of structure which point out in a striking manner the deviation of the Pliosaurus from the Crocodilian type and its approximation to the Lacertian type. The first consists of a spine or crest or ridge, from which the surface slopes away on each side; proving that the temporal muscles were relatively as strongly developed as in the Iguana for instance, and were not placed upon a level with the intermuscular ridge. The pterodyne or the crocodiles, 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 Pliosaurus near to the lizards, is a moderate-sized elliptical vertical perforation of the median part of the parietal bone, the so-called coronal suture, which is an intermuscular ridge, as the foramen Hominum: there it however 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 Pliosaurus 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 character of the genus Pliosaurus. These processes are not however a constant character of the genus Pliosaurus, neither are they peculiar to this genus, being present in the vertebrae of the Crocodile, as well as in those of other Sauria. In a section of the vertebral centrum of a Pliosaurus, the osseous texture for some lines near the anterior and posterior articular surfaces is denser than in the rest of the vertebrae, and the direction of the laminae and fibres is vertical; in the intermediate portion the laminae are horizontal.

Cranium.—Though the head of the Pliosaurus 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 Pliosaurus to the Iguanodont, or, what is the same thing, to the Ornithischian type. These characteristic features are not however exemplified in the condition of many of the individual bones. He proceeds to state that the occipital bone includes the basilar, lateral, or ex-occipital pieces in a permanently separated condition, so that the transverse and ex-occipital forms a larger proportion of the articular tubercle for the atlas, and the ex-occipitals 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 Pliosaurus 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 arched pedicle supporting the mastoid process, is the occipital region to the temporal fossa. The corresponding opening in the skull of the crocodiles is, he remarks, reduced to very small size in consequence of the expanded form and oblique position of the tympanic bone, but in the Lacertian Sauria the tympanic bones are as wide as they are in the Pliosauria, if not wider.
tached by its two extremities only. In its general form, and especially in its length, the tympanic bone is intermediate between the Crocodilian and Lacertian types, exceeding them both however in robustness. In the facial bones the resemblance to the Lacertian Saurians begins to diminish, and the approximation to the Crocodiles to increase; and this tendency is further shown in the strength of the whole maxillary apparatus, the great relative size of the intermaxillary bones, the rugged exterior surface of the osseous parts, and particularly in the distinct alveolar cavities of the teeth: but a striking exception to this tendency is manifested in the external nostrils; their size and position, combined with the structure of the padii, point out the analogy of the extinct Enaliosaur to the existing Ceteceans, offering, as the Professor observes, a beautiful example of the adaptation of structure to the peculiar exigencies of a species. The respiratory apertures are situated a little before the orbits near the highest part of the head: in the Crocodiles they are placed near the anterior extremity of the snout, blended together into a single aperture, and having nearly the whole of their circumference formed by the intermaxillary bones, 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 lachrymal 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 lachrymal bone: the malar bone rests upon its posterior extremity by an oblique suture. The posterior margin of the malar bone is joined to the anterior frontal bone as well as to the sphenoid, thus completing the osseous boundary of the orbit posteriorly. The usual complicated structure observable in the Saurians appears in the lower jaws of the Plesiosaurus. The dentary piece presents evidence of its soon becoming ankylosed 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 articular piece presents a regular and deep concavity for the reception of the articular end of the tympanic bone: it is, as Mr. Coneybear 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 arcs, 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 intermediate, slender, elongated pieces, to which Coneybear gave the appropriate designation which has just been noticed. Each of these sterno-costal arcs 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. The kind of joint, observes the Professor, probably admitted of a yielding or sliding motion of the pieces one upon the other, and favoured, as Mr. 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 mesial plane, where they overlap the anterior thoracic ribs. Into their anterior interspaces 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 Chelonians, 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 Ichthyosauria; the radius is nearly straight; the ulna curved, its concavity being directed towards the radius. The distinctly defined coracoid consists of a double row of small flat rounded ossicula, 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 coracid 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 *ilium*, 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
or tibial metatarsal supports three phalanges, the second five, the third eight or nine, the fourth eight, and the fifth six. The articulating extremities of the phalanges of both the fore and hind paddles are, Mr. Owen observes, subconical, with an irregular surface, indicating that they were joined by ligaments or fibro-cartilage, and not by synovial membrane.

For the particular variations in the skeletons of the different species we must refer to the able memoir from which the above general description of the osseous parts is taken.

The following species, sixteen in number, are recorded by Professor Owen:—Plesiostaurus Hauckiini, Owen; dolicho-derius, Conybeare; macrocephalus, Conybeare; brachyccephalus, Owen; macromus, Owen; pachyomus, Owen; arcurius, Owen; subtergic, Conybeare; tronchenterius, Owen; and affinis, Owen.

Habits of Plesiostaurus.—We now proceed to examine the structure of this extraordinary animal. Dr. Buckland truly observes that the discovery of this genus forms one of the most important additions that geology has made to comparative anatomy. "It is of the Plesiostaurus," says that graphic author, in his 'Bridgewater Treatise,' "that Cuvier ascertains the structure to have been the most heteroleite, and its characters altogether the most monstrous that have been yet discovered as parts of a former world." To the head of a lizard it united the teeth of a crocodile; a neck of enormous length, resembling the body of a serpent; a trunk and tail having the proportions of an ordinary quadruped, the ribs of a camel, and the paddles of a whale. Such are the strange combinations of form and structure in the Plesiostaurus,—a genus, the remains of which, after interment for thousands of years amidst the wreck of millions of extinct inhabitants of the ancient earth, are at length recalled to light by the researches of the geologist, and submitted to our examination in nearly as perfect a state as the bones of species that are now existing upon the earth." Conybeare thus speaks of the supposed habits of this extinct form, which he has in a manner built up before our eyes with as much material as were very scanty compared to those which have since been discovered:—"That it was aquatic is evident from the form of its paddles; that it was marine is almost equally so, from the remains with which it is universally associated; that it may have occasionally visited the shore, the resemblance of its extremities to those of the turtle may lead us to conjecture; its motion however must have been very awkward on land; its long neck must have impeded its progress through the water, presenting a striking contrast to the organization which so admirably fits the Ichthyosaurus to cut through the waves. May it not therefore be concluded (since, in addition to these circumstances, its respiration must have required frequent access of air) that it swam upon or near the surface, arching back its long neck like the swan, and occasionally darting it down at the fish which happened to float within its reach? It may perhaps have lurked in shallow water along the coast, concealed among the sea-weed, and, raising its nostrils to the surface from a considerable depth, may have found a secure retreat from the assaults of dangerous enemies; while the length and flexibility of its neck may have compensated for the want of strength in its jaws, and its incapacity for swift motion through the water, by the suddenness and agility of the attack which they enabled it to make on every animal fitted for its prey which came within its reach." (Geol. Trans., vol. i., part 2, p. 268, 3.)

Of the general characters of the Ichthyosaurus Professor Owen treats as follows:—

"The Enaliosaurians 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 articulare 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 in the lemniscate or so-called 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 rays which point without the natatory membrane of the pectoral 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 structure 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 Enaliosaurian group. There is no trace however of any confluence of the terminal caudal vertebrae, or of any modification of their elongated neur-apophysial and hem-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 laterally compressed form of the terminal vertebrae, ascertained by Sir Philip Grey Egerton, has almost demonstrated the existence of such a fin. The only evidence in fact which the skeleton of the cetaceous mammal affords of the powerful horizontal caudal fin which characterizes 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 cartilage 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 Dissection of the Tail of a certain point observable in the Skeleton of many Ichthyosaurus," Geol. Trans., vol. iv., p. 511, second series, just published (July, 1840), and see the article Icnerosaurus, vol. ii., p. 452.

* I would strongly recommend this observation to be made on specimens of Ichthyosaurus from the isles of Barrow-on-Soar, which appears to have been more favourable to the preservation of the bones than in other localities. The specimen from which Mr. Buckland described the tegument of the abdomen, and that in which the depression of the fin and the soft rays were described by me, were both from Barrow-on-Soar." (Owen.)
Thus, in the construction of the principal alimentary 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 from the perceive the Saurian character; its peculiarities, though secondary in nature, only accentuate its affinity to the Cetaceans; while its vertical position brings it close to the peculiar condition of the natatory organ in the fish.

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 air would not be possible. The need of the respiratory process, the rapidity and facility to the surface to inspire; and the Ichthyosaurus was also an air-breather, a like position of the caudal fin might be considered to be equally essential to its existence 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 Cetacea; 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 abdominal fish, with a longer tail and smaller caudal fin than usual; scaleless moreover, and covered, according to the accurate and careful observations of Dr. 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 antient deep shows that under their fel-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 its structure, observes, as conjecturally, that the terminal arch cavity, and still more essentially in the unanchylosed state of the composite cranial bones, enters into a most careful and detailed description of the skeleton, which our limits will not permit us to follow throughout, but every word of which should be attentively perused by the physiologist. We cannot however refrain from laying before the reader his description of the pectoral arch and the adaptation of this part of the organization, in particular, to the wants of the animal.

We have already remarked," says the Professor, "that the extremities bear a resemblance, in their bony structure, to the paddles of the Cetacea. But this resemblance is limited to the outer parts. In the Ichthyosaurus, a rudimentary arch and ossicle intervenes between the two extremities of the Cetacea, the pectoral fin is attached to their nates, and the bone forming the process, and is merely suspended in the flesh. In the Ichthyosaurus, as in the Plesiosaurus, the pectoral fin is connected with, and must have acted upon, a powerful and resisting osseous arch, having the sternum for its keystone. The sternum in fact here exists solely for the function of the anterior members, and does not enter at all into the formation of the costal arches or the respiratory cavity. In the Cetacea, on the contrary, the sternum is limited to its connection with the ribs, and to the completion of the thoracic cavity.

In the Ichthyosaurus the representative of the sternum is analogous to the episternal element as it exists in the Ornithorhynchus and Lacertilia Sauria, and, as many of the latter tribe, it presents a triradiate form. One branch occupies the median line of the pectoral arch, is broad and flat, and rounded posteriorly; the other two branches from each of the anterior angles of the median piece, and, diverging at the anteriormost end, to which they appear to be attached, give rise to two clavicles, to the posterior and middle part of which they are closely attached; as they proceed outwardly these lateral rays of the episternal bone gradually diminish to a point.

The scapula is two armed, the dorsal and broad bone, presenting the single parapleurogrammatic form which characterises it in the Oseous Vertebrata. The anterior margin is fixed to the clavicles, and to the extremity of the lateral process of the episternum, the inferior extremity appearing two facets, one of which is attached to the coracoid bone, the other forms part of the articular surface for the humerus.

The coracoid bones, which constitute, at their contracted and thickened, outer extremities, the remainder of the glenoid cavity, become sudden and remarkable, minute and expanded as they pass inward to articulate with the episternal bone. They are also complicated each in the young Ichthyosaurus with an epiphyseal piece wedged into the angle between the coracoidal and the episternal bone, which pieces correspond with the epicoacroids of the Lacertian Sauria and Ornithorhynchus. The existence of these bones I have determined in some of the Essays. They have beautifully worked-out skeletons in the collection of Mr. Hawkins.

The clavicles are strong, elongated, slightly curved bones, thicker in the middle than at their extremities, articulated by an oblique suture to the transverse processes of the episternum, with their median extremities in contact, but not anchylosed together as in the furcula of the bird: in this respect, as in their connection with the episternal bone, they correspond with the clavicles of the Ornithorhynchus. In the entire mechanism of the complex pectoral arch indeed the resemblance between these very different animals is remarkably close, as Mr. Clift first pointed out, while the difference which both these air-breathing aquatic animals present in this part of their osseous structure from the Cetacea is very striking. In the Cetacea, for example, there is not any ossaceous bar interposed between the two shoulder-joints, or the centres on which the fore-paddles were worked, while similar movements of the fore-paddles of the Ichthyosaurus I have not seen exist, nor have they their momentum transferred to and resisted by less than three transverse bones, viz. first, by the clavicles, secondly, by the episternal forks and the scapula, and thirdly, by the coracoids and scapula. To whom the necessity in the habits of these species had these differences of structure reference? Most assuredly it could not relate exclusively to the necessity of rising to the surface to respire air; for I have heard of no instance in which this necessity existed in all the three types of aquatic animals, and much more impressively in the Cetacea than in the Elandosaurus. In the Ornithorhynchus the anterior extremities are directed outwards, as in the marine Cetacea; but they are destined in that quadruped to be applied not only to displace water, but to be occasionally pressed against a more resisting surface, as the dry land: in order therefore to enable the fore limbs to react with due force upon the resisting surface, a strong bone is necessary, two shoulder-joints, whereby these parts are prevented from yielding upwards into the soft muscular mass. But in the Cetacea, which were never intended to quit the deep, such a bone would here be useless, and would add 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 raise themselves, and that for breathing brings the head to the surface of the water for the purpose of breathing is the same in both the Monotreme and the Cetacea, viz. a strong muscular horizontally flattened tail. In the Ichthyosaurus a pair of hinder paddles (which in the legged species, as the Ichthyostega, 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 a perfect organ for propulsion, navigation; 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 essentially to the warm-blooded aquatic species above cited.

For what purpose then were the sterno-clavicular and coracoid arches assigned to the Ichthyosaurus? Doubtless not for breathing空气中, for the necessity of respiration 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 ceteal, may have the use of its hind limbs for the deposit of their eggs, supposing them to have been oviparous, as the sum of the analogies deducible from their ossa,

Vol. XVIII.—2 L
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 *Ensalcoaurs*, or the extent of strata through which their relics have been traced, his researches are merely confirmatory of the generalisation already enunciated by Mr. Conybeare and Dr. Buckland. 'The British *Ensalcoaurs*, says Professor Owen, 'extend through the whole of the oolitic period of Great Britain and Ireland to the westmore and chalk formations, the most recent depositary being the chalk marl, in which *Ichthyosaurus* remains have been discovered by Dr. Mantell, at Dover. Dr. Buckland has found similar remains in the gallery near Benson, Oxon; and I have seen the humerus of a *Ichthyosaurus* from the gallery near Maidstone.' (Report.)

External Integument.—The tegumentary covering of the *Pleurosaurs* was in all probability similar to that of the *Ichthyosaurus*. (See p. 215, above, and Owen, *Hist. & Geol. Col. Brit.,* vol. xii. p. 433.) Mr. Swannison, 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 barded as in crocodiles. The first conjecture however seems most probable.' In 1836, Dr. Buckland had published figures of portions of the integument of *Ichthyosaurus*, in his 'Bridgewater Treatise' (vol. i. pl. 10, ff. 1, 2, 3, 4); and Sir Philip Grey Egerton is in possession of a hind-paddle 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 on a similar part.

Place in the System.—M. Mummé and Bibron arrange *Pleurosaurs* and *Ichthyosaurus* under their *Sauriens Amphidactiles fossiles*, an arrangement to which we cannot subscribe on account of their tegumentary covering, and for the reasons given in the article *Eocodoceles*. (Vol. viii. p. 169.)

Hermann von Meyer places the genera between *Iguana- dor* and *Mosasauridae*. Mr. Swannison makes the *Elanosaurus* (Ensalcoauris, or *Ensalcoauria*, we suppose, is meant) the third order, arranging it between the order *Chelodons* (Tortoises) and *Ophidae* (Serpents). In that part of the work headed 'Synopsys and Natural Arrangement of the Class of Repilia,' Mr. Swannison's definition of the *Elanosaurus, Fish Lizards*, is: 'Body lacertiform, feet fin-shaped, jaws exceedingly long;' and he arranges under it 'Pleurosaurs' (*Pleurosaurs*), *Ichthyosaurus* (e.g. *Ichthyosaurus*), *Saurocephalus*, and *Pterodactylus*. In a subsequent part of the work, headed 'A Natural Arrangement of the Class Reptilia,' the *Elanosaurus, Fish Lizards,* are thus defined:—'Lacertoform; 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*, *Pleurosaurs*, *Saurocephalus*, and *Pterodactylus* being omitted. By microscopic examination of a tooth of the fossil presented to him by Dr. Hardey, Mr. Spratt had proved the *Saurocephalus* to be a true osseous fish, nearly allied to, if not actually a Sauroid fish, as M. Agassiz had previously conjectured.

Professor Owen's opinion of the zoological situation of the *Ensalcoaurs,* will be seen in the excellent Report from which we have drawn so largely.

**Pleskow.** [Pskow.]

**Pleistodon,** a name given by MM. Duméril and Bibron to a genus of their Scincoidian Lizards, or Lepidosaur (Saurophthalms) — *Euprepis* of Couteau, *Euprepis,* part, of Wagleri—which they thus characterise:—

Nostris opening in the middle or nearer to the middle of the nasal plate; two supra-nasal plates. Palate with a wide median groove, opened out at its anterior extremity; pterygoid tooth; scales smooth.

**Pleth'ora** (a Greek word, *πλῆθος, plēthōs,* fullness, in which it is applied to the term used by Greek 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 mucus much implied to the existence of an excess of one or other of those fluids in the blood. Distinctions 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 a proper layer of nourishing cellular tissue, which in most of the cases swell, and the eyes blood-shot, there is pain in the head, with giddiness, ringing in the ears, dullness, heavy sleep, and a sensation as of flashes before the eyes, inability of exertion, constant feeling of fatigue, and frequent inclination 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 glutony or excess in the actual diet, by 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 inflammation and to hemorrhages in important organs, as the brain, in which the latter produce a very puerile and unmanly result. To avoid such consequences, a less nutritious 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 superficial veins and the neighbourhood of any organ in which there seems a peculiar disposition to its accumulation, or from which it was once habitually discharged; active aperient should also be administered, and the diet should be reduced as much as the constitution and condition of the heart will allow.
lungs; each is covered with a delicate layer of epithelium; and they enclose within them a space called the sac of the pleura, in which a small quantity of serous 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 excited and communicated immediately from the French Pleurisie, which comes from the Greek πλευρίσης, and this again from πλευρα, the side, which is defined by Rufus Ephesus (De Corp. Hum. Part. Appell., pp. 30, 51, ed. Clinch) to mean such a part as that part of the body which is under the arm-pit. As this is one of the diseases of which both the nature and the treatment were understood by the ancients almost as perfectly as by ourselves (except of course that they had not the assistance of anesthesia and drugs), we need not repeat what has been said upon the subject. The symptoms 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 or exactly derived from their less 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 is properly so called, says Paulus Agineta (loc. cit., in Mr. Adam's translation, sv. London, 1834), "is an inflammation of the membrane which lines the ribs, and is attended with difficulty of breathing, cough, constant and frequent shooting pains in the hypochondrium," which definition agrees with that given by Galen (De Loc. Afect., lib. v., cap. 3, p. 326, ed. Kühn; Ad Glauce. de Med. Meth., lib. ii., cap. 1, p. 77; Introct., cap. 13, p. 754), and which is followed by Dr. Lassell, Agineta, Aristotle, and Alexander Trallianus (loc. cit.). The disease has been variously divided by different writers; Dr. Good (Stud. of Med.) mentions the following three 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 ensalute cartilage; with great anxiety; the inflammation, from its symptoms, being obviously seated in the mediastinum. 3. Pleuritis Diaphragmatica, Pleurisy of the Diaphragm. Painful constriction around the preecordia; small, quick, labiuous breathing; manifesting that the inflammation is seated chiefly in the diaphragm. He adds however, that the subdivisions lead nothing 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. Lassell, viz. acute, chronic, and chronic, and 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.

Aegineta (loc. cit.), after Reynolds's translation, sv. London, 1837), "we have acute 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 side 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, losing of food, bright redness of the cheeks, a dry cough, difficult expectoration.

To this description it may be added, from Paulus Agineta, that the pulse is hard and serrated; and it should be noticed that the decubitus, or position of the patient, mentioned by Aegineta 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 on the upper side, or upon the back.

With respect to the diagnosis of pleurisy, it may be distinguished from hepatitis, says Paulus Agineta, by the pain occurring in the side, and not in the middle of the breast, without expectoration and 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 hard, and the breath throughout is harsh, and the face appears pale. (Compare Alex. Trall., loco cit.) It may be distinguished from inflammation of the external muscles, or pleurodynia (Pleurodyonia), by the more affecting the side, and by the affectation appearing, accompanied with cough and expectoration, nor is the pain 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 both 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 cough, either accompanied with the beginning of expectoration, or a continuation of the cough spun with a thin mucous expectoration; should the spout be more abundant, or deviate from this character, we may suspect a complication either of pneumonia or bronchitis. The cough known as Dr. Lassell's Dry Cough, is 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 LUNGA, DISEASE OF THE, while only those relating to pleurisy will be given here. As this disease will be allowed to play its part in the history of the chest. The deatru de l'orment, or sound of friction, will be heard when there is partial albonius 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; as this disease will be diminished or removed by change of position. Astegmomy will exist when the quantity of fluid effused is no more than from fluid exudate layer between the surfaces of the chest. The deatru de l'orment, or sound of friction, will be heard when there is partial albonius 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; as this disease will be diminished or removed by change of position. It was in cases of pleuritic effusion that Hippocrates proposed the succession, or shaking of the chest, as a means of assisting the diagnosis. [Loc. cit., lib. i., pp. 178, 179, 180, lib. ii., pp. 256, 258; Coac. Præmolt, 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 is, when the pleurae be in contact with pleuritis, 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 alternations of the pleura itself, and partly of the secreted fluid. Inflammation of the pleura, says Lassell, is always accompanied by an extravasation on its internal surface; the matter exuded being either coagulating lymph termed a false membrane, or else serosity, or a sero-purulent fluid. The false mem- brane, 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 plrurae being sobered, and thus the pleurae are left free, and the pleura costalis become 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 affected 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 Lassell (after Celus), are—leaning upon a cold object, violent exercise, gout, rheumatism, and cutaneous diseases; blows on the chest; and fracture of the ribs. The winter season, says Arethus, 'is most liable to promote the exacerbation of this disease as the air is colder, and the people less so, unless it chance to be a cold one, while the summer is the least so of all.' In reference to the period of life, he remarks that old people are more liable to it than those who...
ple are in the prime of life; and these again than children. Among predisposing causes, Laennec mentions a slender frame, narrowness of the chest, the immoderate 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 Aretæus, "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 an empyema in the pleura anterior; the patient has been escaped: should the matter however burrow between the ribs and separate them, and then point externally orburst into the bowels, the patient usually survives.

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 the Romans and Africans. Alribert, tract. ii. sermon. 4. cap. 68, Avicenna (Canon, lib. iii. fol. 10, tract. 5, cap. 1), Avenzoar (Teitir, 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 which have been most hotly handled in consequence of the circulation of the blood, was before 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 Brisaut, 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, and was ranked in the most prominent manner by the body of physicians; but in the meantime the partisans of Denys, who were 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 Brisaut'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 equality of doctors, they complained of a pope and a syndic to declare 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 Parma, himself the author of one of the most scribbled pursuits to the practice which Brisaut 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 Arabs was generally condemned. A list of these treatises is given by René Moreau, in the Life of Brisaut, prefixed to his edition of his work 'De Incisione Venei in Pleuritis Morbo.' Soc. Paris, 1622, 5vo. (See Bayle, art. 'Brisaut', 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 salines diuretics, diaphoretics, purgatives, mercurials, blistering, &c., may be employed; in cases of acute pleurisy the operation of paracentesis thoracis is very seldom had recourse 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 muchacceleration of pulse or heat of skin; the pain in the side amounts to very little; the patient's speech, though somewhat laboured, of breathing is sometimes so considerable as not to attract the individual's attention. However, his unhealthy pallid appearance, his loss of appetite, and languid look make it evident that there is more in store for him than is at first sight apparent. Upon examination, it is found that the pulse 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 thinner and more condensed, occasionally, however, sometimes 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 amputation of the lung, the effused fluid filling up the pleural cavity, and the chest is able to expand only enough to cover the thin laminae, not exceeding six lines in thickness, lying down along the spine.

The prognosis of chronic pleurisy is, generally speaking, very unprosperous: in the ordinary course of the disease, the lung becomes wasted, and the appetite fails; the pulse is languid, although not much quickened; the legs swell, and the face becomes puffed; the expectation often has a disagreeable allaceous smell. Under these circumstances well-defined symptoms of fever soon supervene, and rapidly wears down the patient.

The treatment of chronic pleurisy differs (as might be supposed) very materially from that of the acute form of the disease. Blood-letting is harder advice. It is ever resorted to, for the weakened habit of body will not bear the exhaustion of it. For promoting the absorption of the effused fluid, as well as for preventing its further secretion, external applications, compromising the different modifications of counter-irritation, and of the cold applications, e.g. cold fomentations, cold sedative, &c., are the most efficacious. In some cases however the operation of paracentesis thoracis seems to be the last resource, and this so often fails that it is by some practitioners considered as having a tendency to improve the habit of body and to relieve the constitutional symptoms, which most commonly accompany this form of the disease, recourse must be had to a nutritious diet not a exciting or cooling, and to the cautious exhibition of such tonics as the patient is able to bear. The deluge 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 patient to be able to breathe with more freedom. (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), Cruxelvirth, art. 'Pleurèse,' in Dict. de Méd. Prat., 1852, 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 Paulus Aegineta.' Celsus, De Med. lib. iv. cap. 6; Pausilus, De Vic. Ratione; Ori-

arius, Collecta Medicina, lib. ii. cap. 8; Jovius, Anthro-

osis, Math. Med. lib. iv. cap. 4; Theophrastus Nonnus, cap. 129; Celsius Aurelianus, De Morb. Acut., lib. ii. cap. 13; Octavius Horatianus, Rec. Med., lib. ii. cap. 4; Marcellus Priscus, Cicada Aur. lib. ii. cap. 18; Cicero, De Agric. Pect. cap. 7; Alarahanus, Pract., lib. xi. cap. 8; Halley Abbas, Theor., lib. xi. cap. 21; Pract., lib. vi. cap. 13; Rhazes, Lib. Dietie, cap. 54; Contrin, lib. x.)

A very complete list of works on the subject of Pleurisy is given in Pluquet, Literatur Museum, Dieties, 4 vol.
to. Tübing, 1808; and a selection in the Appendix to the Cyclop. of Pract. Med.

PLEUROBRANCHIA. [SEM-PHYLLIDIAN]

PLEUROBRANCHUS. [SEM-PHYLLIDIAN]

PLEURODICITYUM. Goldfuss employs this term for a species or coral? from the transition rocks of the Hunds- ruck. (Petrefacten, tab. 38, f. 15.) It is said by Mr. Austen to occur in Dorsetshire.

PLEURODONTES. MM. Duméril and Bibron make their Iguanians Pleurodentes the first subfamily of the Iguanians Lizards, or Sauurius Eurotus.

This tribe corresponds to that designated by Wagner under the names of Phascolosaurus and Stenodon Pleurodentes, and by Wiegmann under those of Pachy- glossos Dendrobate and Humagrosus Phlyodontes.

The maxillary teeth of the species composing the Pleuro- dente family are large, strong, and curved inwards, or less trifoliate. They 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. In some the tympanic membrane is stretched on the level of the auditory meatus, in others 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 Pleurodonts Iguanians alone are met
with species whose toes are enlarged nearly in the same degrees as those of [Grino]. All the Neurodont Ignuamis, with the exception of one genus only (Brachyophopus), are natives of the New World.

The following genera are arranged under this subfamily by M. M. Duméril and Bibron:


3. Topothorax. Dum. and Bib. Gen. Character.—Skin of the lower region of the neck forming a transversal fold in front of the breast. Palatine teeth. No femoral pores. Fourth toe longer than the others. All the scales of the body that bear the belly flat and imbricated; the others convex and in justa-position. Tail prehensile.

4. Topothorax. Wieg. Gen. Character.—Skin below the neck forming a projecting fold, or a sort of small non-dentillated dewlap. Anomalous. Four toes longer than the third. Scales of the body imbricated, imbricated in part; those of the sides much smaller than those of the back and belly. Tail moderate, not prehensile, without a crest.

5. Topothorax. Daud. (Anolis, Mer.; Anolis, Cuv.; Dactylus, Wieg.; Draconura, Wieg. and Wieg.; Xiphosurus, Fitzing.). Gen. Character.—Toes does not dilated; their claws are blunt. No femoral pores. Under the neck a goitre, which, when it is not expanded, takes the form of a more or less developed dewlap. Palatine teeth. No pores to the belly.

6. Coryphophanes, Boie (Coryphophanes, Wieg., Gravenhorst; Chamaeleops, Wieg., Graven, Gray.). Gen. Character.—Toes does not dilated, nor fringed on their external border. Posterior part of the cranium more or less elevated into a sort of sacque. Palatine teeth. Tail long, somewhat rounded or very feebly compressed, without a crest. Back, and sometimes the nape, crested. Under the neck a transversal fold, in front of which there is a small dewlap, which is sometimes denticulated. No femoral pores.


10. Iguna, Laur. (Hyp :+:. Hephophorus, Amphibolia, Wieg.). Gen. Character.—A very large delicate dewlap under the throat, the first two or three toes flat or carinated. A double row of scales palatine teeth. Maxillary teeth with their edges finely dentillated. A crest on the back and tail. Toes long and unequal. A single row of femoral pores. Tail very long, slender, compressed, covered with small, equal, imbricated, carinated scales. [Iguna.]


12. Cyclura, Harlan (Iguana, Cuv. and Merrem, part; Ctenosaurus, Wieg. and Gray, part; Cyclura, Wieg., Wieg., Gray.). Gen. Character.—Skin of the throat loose, plaited across, but without the true dewlap of the Iguana. Cephalic plates polygonal, flat, or carinated. Palatine teeth. Maxillary teeth with a trilobated summit. A row of femoral pores. Back and tail crested; the last more or less compressed, furnished with verticellated scales, alternating with rings of spines.

13. Brachyophopus, Cuv. Gen. Character.—Skin of the throat loose, slightly pendulous longitudinally. Cephalic plates very small, polygonal, equal, and flattened. Scales of the upper part of the trunk granulated. Palatine teeth. Maxillary teeth with a tripodobut summit. No femoral pores under each thigh, a very low crest running the whole length of the back. Tail very long, very slender, compressed at its base, rounded throughout the rest of its extent, furrowed with small, equal, carinated imbricated scales, and without a crest.


15. Ophylotheca, Boie. Gen. Character.—Head short, covered above with small polygonal plates, nearly similar to each other in figure and diameter. Nostrils lateral. Sincipital plate small, concave. Palatine teeth. No femoral pores. Tail pressed throughout its length, and surmounted, as well the back, with a dentillated crest. Skin of the throat forming a very perceptible fold, behind which is a strongly marked transversal sulcus. [Enyalius.]

16. Leiotosaurus, Dum. and Bib. Gen. Character.—Head short and depressed, covered with very small flat or convex scales. No crest on the upper part of the body. Palatine teeth. No femoral pores. Tail short, rounded. Anterior toes short, stout, subeylin dricial, furnished below with a row of smooth or carinate scales.


18. Hypothalamus, Wieg. (Uricos, Gray). Gen. Character.—Head depressed, rounded anteriorly, covered with unequal plates; a great occipital scale; great subocular scutella. Nostrils lateral. Palatine teeth. A longitudinal fold under the throat; another transversal fold in front of the breast. Trunk a little depressed, with two longitudinal folds on each side of the back. Bundles of spines on the nape and round the ears. A dorsal crest. Scales of the body carinated and imbricated. Tail rounded or compressed. No femoral pores.

19. Holotropis, Dum. and Bib. (Tropidurus, Fitzing, part; Leiotosaurus, Gray). Gen. Character.—Head in the shape of a quadrangular pyramid. Cephalic plates moderate, angular, nearly equal; a very small occipital plate; subocular scutella dilated across; the other plates oblong. Palatine teeth. Neck smooth below, plaited irregularly on the sides. An oblique fold of the skin before each shoulder. Anterior border of the ear dentillated. Trunk subhedral, covered with imbricated scales of moderate size, surmounted with carinations on a sharp point, and forming oblique lines converging towards the middle of the back. A dentillated crest extended from the nape to the extremity of the tail, which is long and compressed. External border of sincipital and condylar dentillated. No pores at the cloaca nor on the thighs.

20. Proctotretus, Dum. and Bib. (Tropidurus Leiotocerus),
scutella. Nostrils rather lateral, slightly tubular, and _as_ a rule, not rounded back; or each transversely plate beneath the neck, and two strongly marked each other the smooth. Trunk not much elongated, depressed, with small imbricated scales; the under ones smooth; those above surmounted with carina, forming converging lines towards the middle of the body. Neither dorsal nor caudal crest. Limbs of moderate length. Tail rather long, strong, conical, with subverticalicate scales, which are imbricated and carinated. No femoral pores.

27. Tropidolepis, Cuv. and Bib. **Generic Character.**—Head depressed, triangular, elongated, covered with small equal plates; occipital scale hardly distinct; subocular scutella forming many longitudinal rows. Palatine teeth. Membrane of the tympanum rather sunk; anterior border of the ear dentilately. An oblique plate of the skin before the tympanum rather slender. Neither dorsal nor caudal crest. A very small dentilately crest extending from the nape to the tail. Trunk rather elongated, subtrihedral, with imbricated scales, smooth below, offering above carinate disposed in oblique lines; tail rather long, compressed, surrounded with verticillations formed by very spiny scales. No femoral pores.

28. Phrymosoma, Wiegm. (Agamas orbicularis, Duand part; Topyacu, Cuv., Fitzing.). **Generic Character.**—Head short, rounded anteriorly, bordered posteriorly and laterally with large and strong prockles. Cephalic plates polygonal, equal, and small subocular occipital plate. No palatine teeth. Beneath the neck plaited transversely. Border of the ear simple. Trunk short, oval, very much depressed, offering on each side a squamous dentilately arête. Upper part bristle with trilobed tubercles springing in the middle of the arête and imbricated scales. Neither dorsal nor caudal crest. Limbs very short; toes 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.

29. Micrurus, Cuv. and Bib. **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 muzzle. No palatine teeth; all the maxillary teeth simple and conical. A longitudinal fold under the tympanum, followed by another which is transversal. Foldings on the sides of the neck. Borders of the auditory holes simple. Trunk not much elongated, compressed, enlarged on each side. Tail short, the sides plates of the hind small, numerous, serrated, imbricated, united. Neither dorsal nor caudal 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 loose (effiles). A long row of pores upon each ear.

30. Oplurus, Cuv. (Tropidurus, Wiegm., Fitzing, Gray, part). **Generic Character.**—Head triangular, but little elongated, thick, furnished with plates of moderate size; occipital scale much smaller than the carinate ones, and carinate 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 of the tympanum. Membrane of the tympanum sunk. Anterior border of the ear subdentilated. Trunk very slightly depressed; a fold of the skin along each side. Scales of the back small, uncarinated, and with their borders, as it were, swollen; scales of the belly with three carinations. A small dentilately 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 loose (effiles).

31. Doryphorus, Cuvier (Urocotrentum, Kaup, Wagi, Wiegm.). **Generic Character.**—Head short, triangular, flattened laterally. A great occipital plate; scales polygonal, small, nearly equal on the rest of the cranium. No palatine teeth. Under the neck a double transversal entire fold. Ears not dentilated. Nasal plates nearly lateral and convex. No crest on the upper part of the body. Trunk short, the convex edge prolonged longitudinally on the sides, and with small imbricated smooth scales. Tail little elongated, stout, flattened, surrounded with strong spiny verticillated scales. No femoral pores.

The term "pleurodonyia" is used in the text, which is an expansive suffix that generally refers to those of MM. Dumeril and Bibron. A few of the most remarkable forms have already been illustrated in this work. [Iguanidae.]

PLEURODYONIA (from πλευρα, the side, and δόντια, teeth from the side), called the pleurodonts, includes all those pains of the side which are unconnected with pleuritis 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 Malacostracii and section Subbrachiales. This family contains the Soles, Flounders, and Turbots, and some other fishes, all of which are readily distinguished by the flattened form of the body and in having both the eyes on one side. The position of the eyes in the form of the head in the soles, states, is unique amongst vertebrate animals. The side of the body which is uppermost is always coloured, and might be mistaken for the back of the fish, whilst the opposite side is white or yellowish, and it is uncommon to find the two pectoral fins equal; 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 a saucershaped form. The Pleuronectidae are divided into the following genera:

Genus 1. Plaeta, in which the jaws are each furnished with a single row of obuse teeth; on the pharynx 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 Plaeta (Plaeta vulgaris, Cuv.), which is usually about a foot or rather more in length; of a brown colour above, spotted with red or orange; on the eye side of the head are some osseous tubercles; 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. fluero), Dab (P. limanda), and Lemon Dab (P. microcephalus), are also examples of the genus Plaeta.

Genus 2. Hippoglossus, Cuv. The species of this genus differ from the Plaetae in having the body usually more elongated, and the jaws and pharyngeal armed with single 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 to it in flavour.

Genus 3. Rhombus, Cuv. The species of this genus have the jaws and pharyngeal furnished with thickly set pointed teeth; the dorsal fin commences immediately above the upper lip, and this fin, as well as the anal, extends nearly to the tail. The eyes are generally on the left side.

The Turbot, Brill, Muller's Topknot, Bloch's Topknot, the Whip, and the Scadfish are British examples of the genus Rhombus.

The Turbot (Rhombus maximus, Cuv.), next to the Holibut, is one of the largest of the Pleuronectidae 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 Banneck Fluk.

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 lesser breadth, 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. Soles, 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 shore all round our coast, where it keeps to the bottom, feeds on the bottomless animal and the fry of other fishes; as they will not readily take bait, they are almost entirely caught by trawling. Eighty 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 slenderer and of a yellower and less uniform colour.

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. lingulatus). There are moreover certain Soles in which the pectoral fins are altogether wanting: they constitute the subgenus Achirus according to Cuvier.

PLEUROPTERA, the name of a tribe of quadrupeds generally known as Lemurs, is applied to the Lemurs (Flying Cats and Flying Foxes of voyagers). They are generally arranged under the order Carnassiers, and some authors place them in the division Chetoroptera: but they differ from the Bats 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, so that 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, 4; canines, 0-0; molars, 6-6 = 34.

This is the formula given by M. Lesson, states that the canines are dentilate and short like the molars. He states that the upper incisors are also dentilate 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 was probably adopted 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 the upper jaw, the internasal bone, though very extensive, has no teeth in its anterior part, and in the posterior part there are two on each side. The descending line in the upper part of the lower jaw marks the extent of the internasal bone.

The dention, as it appears to Mr. Waterhouse, is as follows:—

Incisors 2-2; canines 0-0; false molars 2-2; true molars 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 Galeopithecus. He compares the two canines to the outer laminæ of one of these incisors. Like one of these laminæ, the Lemur's canine is dilated immediately above the base, and has a longitudinal ridge on the upper side, whilst the incisors, like the intermediate laminæ, 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 Lemur agrees, see with the larger Primates, e.g., the former of the upper canines are wanting. In both these groups of animals the incisors of the lower jaw are, he observes,
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 11½ 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. Temminckii* 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. Temminckii*, 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. Temminckii*, 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.)

**Tooth of Galeopithicus, one-third larger than nature. (P. Cuvier.)**

Geographical Distribution of the Genus, Habitat, &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 detrition 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 *Vesperanthidae*. (Outline, &c., in Ann. of Philosophy, 1835.)

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. Linnæus 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 *Ateles* and *Cheirogaleus*. (Natural History and Classification of Quadrupeds, 1835.)'

Three species have been recorded: 1, *Galeopithicus rufus*, Geoffr., Aubel. (Lemur volans, Linn.); 2, *Galeopithicus variegatus*, Cuv., Geoff.; 3, *Galeopithicus Temminckii*, Geoff. But the general opinion seems to have been that only one, the Lemur volans of Linnæus, 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, evidence taken from extremely young animals. Mr. Waterhouse then proceeded

---

**Skull of Galeopithicus Temminckii. a, seen from above; b, seen from below. (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 jag.
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 what he received in his native city.

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 those 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 procured 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 proof of his sincerity, he was required to set a kind of drama 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 voices which he even more unerringly and atrosciously 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 manufacture of pianofortes. 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 suddenly agitated a frame of body 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 an art, 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 them were subdued by time, 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 matted 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 exposure to neglect of cleanliness; and by 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 Polish beauties 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 caring 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 viscid 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 constant benefit 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. [SPONDYLIDAE.]

PLICIPENNES, according to Latreille, the third section into which the Neuropteron insects are divided. The insects belonging to this section are well known to angler by the name of Caddis-fly, and in the larva state they are called caddis-worms or cadam-worm. They constitute the genus Phrygania of De Geer, and have been raised to the rank of an order by Messrs. Kirby and Spence and Dr. Leach, being the order Trichoptera of their systems.

The Phrygania, or Caddis-flies, are distinguished from other Neuropteron insects by the absence of mandibles, and in the structure of their mouth; in fact they evince an approach to the Lepidopteron insects as well as to 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 formed of pieces of sticks, small shells, and various other substances, which the insect joins together by a silken web.
It never quite this case, but when it wishes to move it procure
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 books
sitting on 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-
mants soft. When about to change into the pupa, the larva
fixes its tube 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 head and thorax divided into three and seven
segments, and it is termed a pupa because which it makes
its escape from the case, that it may swim to
some dry situation when about to assume the perfect
state.

The Phragyain are very numerous, and M. Piectt states
that 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-
bcrs. The author just quoted, M. Piectt, 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 his opinion, which is one of the most perfect monographs
ever published, the Phragyain are divided into eight
genera, as follows:—

Genus 1. Phragyain proper, distinguished by the superior
wings, having some transverse nerves near the bifurcation
of the veins; posterior wings folded; antennae 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 Phragyain.

Genus 2. Mystacida, Latreille. Anterior wings straight
and elongated, having a few transverse nerves; posterior
wings much folded; antennae setaceous and slender, longer
than the wings; maxillary palpi five-jointed in both sexes,
long and pubescent.

Genus 3. Trichostoma, Piectt. Anterior wings short,
without transverse nerves; posterior wings but slightly
folded; antennae comparatively thick and short, and the basal
joint very hairy; maxillary palpi three-jointed in the male,
the terminal joint is rounded; the female is more
furnished with hair on the terminal portion than at the base.

Genus 4. Sericostoma, Latreille. Anterior wings with-
out transverse nerves; posterior small, and but slightly
folded; antennae stout and short, and having the basal joint
long and thick; the maxillary palpi in this form shaped
like the bowl of a spoon, and uniting 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. Rhyoscelita, Piectt. Anterior wings without
transverse nerves; posterior wings straight, of the same
form as the anterior pair, and almost destitute of folds;
antennae 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 coriaceous
appendages.

This genus contains many species, all of which are of
small size.

Genus 6. Hydrosceiha, Piectt. Anterior wings without
transverse nerves; posterior wings straight, the fore
joint slender, 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,
painted, and without transverse nerves; posterior wings
resembling the anterior, and not folded; antennae mo-
* The Recueilles pour servir à l'histoire et à l'Anatomie des Phragyains.'

Genus 8. Hydroptila, Dalman. Anterior wings attenu-
ated and pointed, very hairy, and with the nerves indis-
nerted; posterior wings much longer, the head and
antennae short and filiform, maxillary palpi five-jointed
in both sexes, the terminal joint ovate.

Pliny Valerianus, a name mentioned in a Latin inscription
referred to the author of a work entitled 'Medicinae Pliniani Libri
Quinque.' Nothing is known of his life, but the work is
supposed to have been written about the fourth century a.d.
It is a book on domestic medicine, compiled from Pliny the
younger, Dioscorides, and other writers, and is 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-
cations, partly taken from Dioscorides, and others, and by
later writers. The fourth book treats of the properties of
plants according to their names, and in a great measure
taken from Galen. The fifth book, which is almost entirely
extracted from Alexander Trallius, is upon diet as
accommodated to different diseases. There is a little book
by Just. Godof. Ginz, entitled 'De Auctore Operis de Re
Medic.' vulgo Plinio Valeriano scripser,' Lips., 1736, 4to.,
in which, with much learning and ingenuity (but, in Hal-
ten's opinion, with much dulness), Pliny's work in question
was written by a Christian physician
named Silburus, who is mentioned in the preface to
Marcellus Empiricus. It was first published at Rome, 1569,
fol., by Th. Flaminiaus: it was reprinted (and, according
to its title, by Tho. Haller (Biblia nova, torn. 3, 1755),
1516, fol. It is also to be found in some of the col-
clections of the old medical writers, namely, in that of Torinus
(Thorae), Bas., 1528, fol.; and in the Aldine, Venet.,
1571, fol.

Plinilinmon. [Cardiganshire; Monmouthshire.]

Plinity. [Column; Civil Architecture.]

Pliny the Elder. Caius plinii secundus was
born, as is commonly supposed, a.d. 23. The place of
his birth is very uncertain, and is the subject of much
learned controversy. The antient writer of his life, ascribed
to Sestonius, and after him St. Jerome (in Chron.),
calls him a native of Como (Novocomanum); 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 (conter-
ranum). A full account of the arguments on both sides is
given by Retszosti; his work is ' De Caesaribus.' This
author is himself inclined to give the honour to Como. Very
little is known of the events of Pliny's public life; we are rarely
told that he was of a noble family, and after distinguishing
himself in the field, and filling the office of viceroy at
Tours, was appointed procurator of the imperial post,
employment which he rendered to the emperors; but his
studies. Before day-break, it was his custom to wait
upon Vesuvius, 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 were disengaged from
business, recline in the sun, during which time some author
was read to him, from which he extracted and observed
whatever book he read; 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
would read a small portion of food and rest; and
as 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
mentions a singular instance (Epist., iii. 5) to show how
insolent he was, and how little he knew after 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 him go
by the nose? He is lost by the nose.' I rather liked the
lines.' In summer he 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 the science without
which his mind was empty. In the morning he saw the
sunrise, and when he bathed, that is, was actually in the bath; for
during the operation of rubbing and wiping, he was employed either in hearing some
book read to him or in dictating himself. In his journeys he
must often have witnessed the most extraordinary scenes,
being 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, in-
stead of using his maids, he used a Rameuse. By
this extraordinary application, 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 24th of August, A.D. 79, about one in
the morning, he desired his nephew to send him 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
his house, but in the cloud which covered it; and afterwards to ascend from Mount Vesuvius.
Its figure re-
sembled 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 if 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 son and nephew, for his observations on
the mariners belonging to the galleys stationed at Retina
earnestly intreated him to come to their assistance, since
that port being situated at the foot of Mount Vesuvius,
there was no time for them to escape but by sea. He there-
fore 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
cinder and spatter fell over him, and he was forced to
proceed, fell into the ships, together with punice-stones
and black pieces of burning rock; they were likewise in
danger not only of being engulfed by the sudden retreat of
the waters, but of being窒息 from the mountain, and obstructed all the shore. Here he
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 Stabium, 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 more to dissuade 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 night only made more visible. 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 highest part of the house, almost 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, and went to Pomponianus and the other companies, who were not sufficiently unconcerned to think of going to
bed. They consulted together whether it would be most
prudent to trust to the vessels, which now shone from side
to side with frequent and violent rockings, or to fly to the
villages, and there among the destroyed stones and cinders, though
light indeed, yet fell in large showers and threatened de-
struction. In this distress they resolved for the fields,
as the less dangerous situation of the two; and went out,
leaving Pliny giving orders above the rest. Among the
lines which was all their defence against the storms of stones that fell
around them. It was now day everywhere else; but
there was deeper darkness prevailed than in the most obscure
night, which was consequently illuminated by torches
and other lights of various kinds. They then set out,
go down 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
vessel which was of two ways, was placed in a boat, to which
that was spread for him; when immediately the flames,
and a strong smell of sulphur which was the forerunner of them,
dispersal the rest of the company, and obliged him to arise.
He was raised by a strong wind, which raised the
vessels (for he was corpulent), and instantly fell down dead,
suffocated, as his nephew conjectures, with 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 the account given by 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
remaining is a Treatise on the Art of War, which may well be called ' a
work of great compass and erudition, and at the same time,
as varied as nature herself.' (Ibid.) To give anything like a complete critical analysis of this work would
require the immense and multifarious learning of Pliny himself,
and a thorough knowledge not only of all the ancient
antients have written on the same subjects, but also of all the
improvements and discoveries of modern times. Accord-
ingly in the French translation, lately published, the assist-
ting authors state that 'it is a great number of volumes; the general views of the
author of each of whom has laboured to illustrate Pliny's opinions on
his own particular branch of knowledge. The work consists of
thirty-seven books, all of which are still extant, though
the text is in many places in a very corrupt state, and
in several passages is quite lost. The first book is a table of
the contents of the other thirty-six; the second treats of the
world, the elements, the stars, the winds, &c.; the third,
fourth, fifth, and sixth contain a geographical account of the
whole of the then known world; the seventh and eighth,
each of whom has labourcd to illustrate Pliny's opinions on
his own particular branch of knowledge. The work consists of
thirty-seven books, all of which are still extant, though
the text is in many places in a very corrupt state, and
in several passages is quite lost. The first book is a table of
the contents of the other thirty-six; the second treats of the
world, the elements, the stars, the winds, &c.; the third,
fourth, fifth, and sixth contain a geographical account of the
whole of the then known world; the seventh and eighth,
style enhance 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 philosophic bohème, in whom the germ of philosophy. His work, no less varied 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; but still this copy, this 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 Préliminaire.

The character given by Currie (Biogr. Univers., tome xxxv, is not so favourable, it is more correct. "Pliny's great work," says he, "is at the same time one of the most precious monuments left by antiquity, and a proof of the astonishing learning of a warrior and a statesman. In order justly to appreciate this vast and celebrated composition, it is necessary to consider the plan, the facts, and the style. The plan is immense," &c. &c. "It was impossible but that the authority of the works should increase indeed the facts took place so 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 chain which has been broken, he has broken himself: he has 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. Pliny has been called by the ancients, and after having spent 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 declarations of a discontented philosophy, 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, would no doubt show that he was 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 seeks to produce. Yet, however, his principal uttering against Providence. It is true that he does not give 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 childish stories that always pro- vokes 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 the facts are concerned, the only point in which Pliny has any real merit for us in the present day is that which relates to the manners and customs of the ancients, 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 dullness, his banality, and his defects in the style; all those defects which are mortifying to his readers, for the deficiencies of his scientific 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 to escape from monotony and to keep the cicerone; 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 terrible examples, and a contempt for the unbridled luxury which had in his time so deeply stained the Roman people. In these respects he cannot be too much commended; and in spite of the defects which we cannot but notice in his book when we consider him as a naturalist, we must nevertheless acknowledge that of all the men of letters 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 Cuvier, "that he was almost an atheist, and by no means an acknowledged 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 copious 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 negligent 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 antient artists themselves.

The errors that we have to reproach him with are either unimportant 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 a subject which may be easily remedied by an artist. At the same time it cannot be denied that he has frequently cumbrous 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 is his account of the origin of the imitative arts (xxx. 12. 43). It is evident also that he frequently did not clearly understand what he has endeavoured to convey to others, and the consequence is, that he is sometimes unintelligible; which may be partly owing to the corrupt state of his text. He also lavishes encomiums upon the most trivial objects and examples of purely mechanical excellence, and passes cursorily over the greatest works.

The paintings of the Parthenon, the Delphi (xxx. 9, 35) and the Jupiter of Olympia (iii. 5, 4). Of the Laocoon 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 summarily dismissed, or reserved for his first efforts of art. His immediate authorities probably gave him no satisfactory account of an earlier period. Concerning this period however he has given us many valuable though unconnected doctrines, as, for instance, concerning the original sources that he appears to have consulted—the representations of artists and sculptors, the works of Apelles, Euphranor, Antigonus, Xenocrates, Pasiteles, and Menacechmus, all of which are mentioned by Pliny himself (and there were many others that he might have consulted) (Dinicus, De Poet., ii. 3), the volumes of Melanthius, Pamphilus, Proteogenes, and others—we cannot help feeling surprise that he has given us so little, and we are induced to conclude, with Fussell, 'that he was more of 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., &c., and more than 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 ancient writer.

The following is the opinion of Flixman upon this part of Pliny's 'History,' perhaps in such matters the greatest critic of modern times. He says the whole is "arranged in a natural and methodical order, with such perspicuity and comprehension, that with however, 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 other writings upon the same subject.

The 'Geography' of Pliny is an important part of his 'Natural History,' but the same general remarks will ap-
PLY THE YOUNGER. CALUS PULINII CECILII SECUNDUS, known as Pulianus, was a Cornelian, born on the lake Larius in Insula. The date of his birth is A.D. 61 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 Calus Cecilius, that he was of equestrian family, and that he had a brother named Lucius Cecilius. Pulianus married the daughter of Quintus Plinius, the sister of Pliny the Elder, at whose house, after losing her husband, she, with her son, took up her abode. The young Cecilius was adopted by Pliny (Ep. v. 8), and received the cognomen Pulianus.

His education commenced under the care of his mother and uncle. Verginius Rufus, of whom his pupil has left a grateful record (Ep. ii. 1), was left his tutor. His youthful attainments were of no ordinary kind, for he composed a Greek epic of 20,000 lines, and alluded to the French court. At the age of nineteen he began to practise in the court of the Cenzumviri, 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:—vi. 9; ii. 14; iv. 16; ii. 11; iii. 4; ii. 19; v. 20; vi. 12; vi. 13.

In his twenty-first year he went as military tribune into Syria, where he met with Euphrosine the stree and Artemidora, whose society he made available to his improvement in the world of art and in ordinary conversation, and in his studies. With his learned and studied rhetoric under Quintilian and Nietzsche. At the age of nineteen he began to practise in the court of the Cen

zumviri, 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:—vi. 9; ii. 14; iv. 16; ii. 11; iii. 4; ii. 19; v. 20; vi. 12; vi. 13.

In his twenty-first year he went as military tribune into Syria, where he met with Euphrosine the stree and Artemidora, whose society he made available to his improvement in the world of art and in ordinary conversation, and in his studies. With his learned and studied rhetoric under Quintilian and Nietzsche. At the age of nineteen he began to practise in the court of the Cen

zumviri, 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:—vi. 9; ii. 14; iv. 16; ii. 11; iii. 4; ii. 19; v. 20; vi. 12; vi. 13.

In his twenty-first year he went as military tribune into Syria, where he met with Euphrosine the stree and Artemidora, whose society he made available to his improvement in the world of art and in ordinary conversation, and in his studies. With his learned and studied rhetoric under Quintilian and Nietzsche. At the age of nineteen he began to practise in the court of the Cen

zumviri, 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:—vi. 9; ii. 14; iv. 16; ii. 11; iii. 4; ii. 19; v. 20; vi. 12; vi. 13.

In his twenty-first year he went as military tribune into Syria, where he met with Euphrosine the stree and Artemidora, whose society he made available to his improvement in the world of art and in ordinary conversation, and in his studies. With his learned and studied rhetoric under Quintilian and Nietzsche. At the age of nineteen he began to practise in the court of the Cen

zumviri, 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:—vi. 9; ii. 14; iv. 16; ii. 11; iii. 4; ii. 19; v. 20; vi. 12; vi. 13.

In his twenty-first year he went as military tribune into Syria, where he met with Euphrosine the stree and Artemidora, whose society he made available to his improvement in the world of art and in ordinary conversation, and in his studies. With his learned and studied rhetoric under Quintilian and Nietzsche. At the age of nineteen he began to practise in the court of the Cen

zumviri, 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:—vi. 9; ii. 14; iv. 16; ii. 11; iii. 4; ii. 19; v. 20; vi. 12; vi. 13.

In his twenty-first year he went as military tribune into Syria, where he met with Euphrosine the stree and Artemidora, whose society he made available to his improvement in the world of art and in ordinary conversation, and in his studies. With his learned and studied rhetoric under Quintilian and Nietzsche. At the age of nineteen he began to practise in the court of the Cen

zumviri, 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:—vi. 9; ii. 14; iv. 16; ii. 11; iii. 4; ii. 19; v. 20; vi. 12; vi. 13.

In his twenty-first year he went as military tribune into Syria, where he met with Euphrosine the stree and Artemidora, whose society he made available to his improvement in the world of art and in ordinary conversation, and in his studies. With his learned and studied rhetoric under Quintilian and Nietzsche. At the age of nineteen he began to practise in the court of the Cen

zumviri, 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:—vi. 9; ii. 14; iv. 16; ii. 11; iii. 4; ii. 19; v. 20; vi. 12; vi. 13.

In his twenty-first year he went as military tribune into Syria, where he met with Euphrosine the stree and Artemidora, whose society he made available to his improvement in the world of art and in ordinary conversation, and in his studies. With his learned and studied rhetoric under Quintilian and Nietzsche. At the age of nineteen he began to practise in the court of the Cen

zumviri, 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:—vi. 9; ii. 14; iv. 16; ii. 11; iii. 4; ii. 19; v. 20; vi. 12; vi. 13.

In his twenty-first year he went as military tribune into Syria, where he met with Euphrosine the stree and Artemidora, whose society he made available to his improvement in the world of art and in ordinary conversation, and in his studies. With his learned and studied rhetoric under Quintilian and Nietzsche. At the age of nineteen he began to practise in the court of the Cen

zumviri, 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:—vi. 9; ii. 14; iv. 16; ii. 11; iii. 4; ii. 19; v. 20; vi. 12; vi. 13.
The materials for Pliny’s life may be collected from his Epistles, from which a brief notice has been drawn up by Celarius, 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 Epistles (edited by Muench). But the reader is referred to the Epistles themselves for the most gratifying notices of Pliny the Younger, every epistle being, as Meimel observeth, ‘a kind of historical sketch, wherein we have a view of him in some striking attitude either of active or contemplative life.

Pliny’s Epistles have been translated into English by Lord Orrery and Mr. Meimel. The best edition of Pliny’s ‘Epistles’ is that of Curtius and Amsden, A.D. 1744. Of the editions of the ‘Epistles and Panegyric’ together, may be recommended those of Christopher Celarius, 12mo., Leipzig, 1693; Heare, with Life, by Masson, prefixed, 8vo., Oxford, 1703; Giering, 2 vols. 8vo., Leipzig, 1806.

PLOCAMOCEROS (Leuckard), a mollusk placed by Cuvier in his family Nudibranchiata.

PLOCUS [Fringillidae; Weaver Birds.]

POCK. [Poll.] Pock, the capital of the government of the same name, is situated on the Visula. It has about 8000 inhabitants, of whom 3000 are Jews. Pock is the seat of a Roman Catholic bishop, who resides at Pittusk. There are in the town 11 churches, 5 convents, an episcopal palace, a parish gymnasion, 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 brick trade with Danzig and other places.

PLODERMEL. [Morian.] PLOMBERGOMME—Hydrated Aluminate of Lead. This mineral is in small globular and reniform masses, composed of many compact layers. It is a moderate conchoidal, un even. Hardness sufficient to scratch flour-spar, but not glass. Colour yellow, sometimes tinged with brown, and possessing the appearance of gum-arabic. Translucent. Specific gravity 3.62.

When heated by the blowpipe, it loses water, but is fusible per se. With borax it gives a transparent glass. It is found in the French department of Côtes du Nord.

Analysis by Berzelius. —

<table>
<thead>
<tr>
<th>Substance</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alumina</td>
<td>37·0</td>
</tr>
<tr>
<td>Oxide of lead</td>
<td>40·14</td>
</tr>
<tr>
<td>Water</td>
<td>18·05</td>
</tr>
<tr>
<td>Sulphuric acid</td>
<td>0·20</td>
</tr>
<tr>
<td>Lanthane oxides of manganese and iron</td>
<td>1·80</td>
</tr>
<tr>
<td>Silica</td>
<td>6·0</td>
</tr>
</tbody>
</table>

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 1677 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 Aaehole the Physician of the nation and 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 plan 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 presented to the degree of D.C.L. of the University, he was appointed his secretary, 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 admitted into the College of Arms by 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 derived from his original path, dying at his estate of Sutton-Barne, at the age of fifty-five. He can hardly be said to have established a permanent reputation.

PLOTINA. [Trajanus.]

PLOTINUS, the most celebrated writer and teacher of the Neo-Platonic school at Alexandria, was born at Alexandria 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 Plotinus with an opportunity, which he had long coveted, of forming a personal acquaintance with the notorious 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, Plotinus 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 first ten years of his residence at Rome, Plotinus 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 commit to writing the substance of his lectures. He remained at Rome till his death in A.D. 274, and during all that time he was busily engaged as a 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 his house 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 Athens, where he died, perhaps during one of his visitations, or during his sufferings under an accumulation of diseases.

The works of Plotinus consist of fifty-four books, which were divided into six Enneas, or sets of nine books, by his pupil Porphyry. The works were arranged in a conical 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 pretend to give a list of the facts which Porphyry has told us about his method of composition. 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 at 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 were the most difficult to arrange could say,‘On the power 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. Oud- worth, Henry More, Norris, Gule, and others were students rather of Plotinus and Proclus than of Plato himself; and the gnosticism of some sects of Christians, with the pantheism of Spinoza and others, may be fairly traced to this obscure writer and his school. We know nothing further of Plotinus than what is contained in his Life by his pupil, Porphyry.

A superb edition of the works of Plotinus, in 3 vols. 4to., has been recently published at the Oxford University Press, with this title: 'Plotini Opera Omnia, quae exstant, philosophice complutens, a Creuzer. Oxon. E Typographeo Academico, 1835.' There is a fine English translation of 'Select Works of Plotinus,' by Taylor.

PLOTTING. [Surveying.]

PLOTUS. [Pelecamidae.]

POUGH. 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. But it might excuse a little caution in supposing that the origin of the plough in the branch of a tree dragged along the ground, in which the stump 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 seat. The beam, 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 fan, 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 fan, 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 or rill. Wherever the coulter cut has passed, the 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 stiill or handles, of which there may be either one or two, is the most convenient, direct the plough by keeping it in the line required and at a regular depth in the ground. The single stiill 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 introduce the mould-board plough and isn't furrow, a shape of 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 stiills.

The Hindu plough consists of a slight beam, often without any coulter, a narrow share, and a corresponding stillet. The parts of it are slightly polished with iron. It is not so light 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 not so well made as a real furrow in a shelly 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 stiills, of some of our more complicated instruments called cultivators or grubbbers, 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 a stout shovel pulled 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 furrow drawn 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 improvements have 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 Arato Romain. It consists of a beam (lurd), a body (lurav), a share (lurist), and a handle (stiill). 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). The sole of the plough AB has two pieces of wood CG and Dl 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, 'Duplex aptantur dentalia dorso' (the teeth are fitted to the double back).

These 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 dentalia pushed aside. The point was in the shape of the head of a lance. This plough might suffice in light meadow soils, which had been long in cultivation and had more the texture of garden mould than of stubborn clays.

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 power of the plough, which 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, but 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 harracks, 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-plies 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-plies 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 next to the unploughed land, and this is done by means of a piece of wood AB (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.

These 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 dentalia pushed aside. The point was in the shape of the head of a lance. This plough might suffice in light meadow soils, which had been long in cultivation and had more the texture of garden mould than of stubborn clays.

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 power of the plough, which 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, but 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 harracks, 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-plies 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-plies 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 next to the unploughed land, and this is done by means of a piece of wood AB (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.
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 A B D C (Fig. 6), the depth A C being the thickness of the slice, and A B 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 A' B' C D', where it is inclined at an angle of 45° to the horizontal line; the surface A B (or A') 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, and 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°.
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. Inset BC in E and DC in F; at F raise a perpendicular FK 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 on CD lines at right angles to CD, meeting the line KE in different points: these lines will form the required surface.

Fig. 7.
The line KD will be found inclined 40° 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 40° at D, lying in the direction EK in Figs. 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 as 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 EK at right angles to this plane, and meeting the line KE (Fig. 9). These lines will be at different angles to the horizon, nearly horizontal at C, where the fin of the point begins perpendicular at F, and at 45° beyond it 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 arches 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 fin of the share may also be varied, either lengthening or shortening the turn-furrow, as experience may show to be most advantageous.

Horizontal Plan of the Plough.

Fig. 9.

Sections of the three different turn-furrows at different distances from the heel.

Fig. 10.

Fig. 11.

Fig. 12.

A plough has been lately constructed on this principle by Messrs. Ramsay 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 realise 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 Firmus 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 this metal. The beam and stilt 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 on the mean time the labour 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, that shape is preserved without the plough being made on the same pattern, and with respect to the turn-furrow this is of the greatest importance.

The stilt 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 stilt 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 it 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 bent at a small angle with the sole towards the right, has an arch of wood
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.

Fig. 14.

Another 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 plough of the ground. When the soil is of unequal texture, it is useful to have a small wheel connected with the fore part of the beam, so as to prevent its dipping downwards, which would require a great pressure on the stilts to keep 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 can scarcely 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 fulcrum on which he can raise his slice, 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 influenced the result, when wheel-ploughs have appeared to require the least

2 N 2
power of draught. But wheels have one advantage: they will enable an inferior ploughman 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 exertion of the ploughman adds to the labour of the horses.

Some interesting experiments have been made on the draught of different ploughs by Mr. Handley, M.P., for Lincolnshire, and Mr. Pusey, M.P. for Berkshire, which are detailed in the third and fourth numbers of the Journal of the Royal Agricultural Society.

Without entering into any comparison of ploughs differently constructed, 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 advocates the opposite shape, the only thing which is not very convex. That plough will no doubt 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 require. Then other circumstances will be equal. 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 or horses, and varies the plough purchase a 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 soil, not hard and dry, and 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 the ploughed up earth, it is desirable to prepare it for receiving 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 succeeding crop. In the next furrow the angle of the slice 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-wrest 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 to 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 groove in the earth at the proper distance, and will be laid upon it. This prevents useless openings between the slices. It adds no doubt to the draught, but it makes better and neater work.

The plough may be dibbled on the sward, which is reversed by a single ploughing, it is necessary that the soil 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 any interference between the slices which are turned over. It requires a good ploughman to do this perfectly.

When clover-ley 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 coulter, and this falls into the bottom of the furrow and is buried there. The coulter with such a wing is called a skin-coulter, because it, as it were, skins 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 no more horses should be put to a 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 the horses should be 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 therefore 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 inch 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 in a day with 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 vanted the plough purchase better to pulverize 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 EEF 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 D C A B, marked with the dotted line, and in doing so beats and crumbles it, leaving a fresh trench. The plough being turned to the first, and so the whole field may be ploughed without difficulty. In nine 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 subfoil ploughing. Where the farmes 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.

Very little attention was formerly paid to the straightness of the furrows. It was nature which made the shape of these 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 the contact of the furrows, and a strict difference 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 small, and the moisture remains in it, after continued rains, than 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-
being quite covered by the two last. This now forms the crown of the ridge; and the succeeding slices are laid obliquely; and by the time 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 lands, 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 riggs. In English the term rig was used for the length of ground crossed by a furrow, by which means the whole soil is 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 root or crottle, balks, 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 the plough, must often be left open, 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 wet country; for the 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 hollows or gutters. The water naturally sinks down into the newly-ploughed land, till it meets the solid bottom which the plough has gone over; if it can run over this into the deeper furrows between the stitches, it evaporates or runs off, and the land is left dry, and so constituted 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 sun in summer, or the frost in winter, to purify and fertilise it. To expose as great a surface as possible, the whole field is laid in high and narrow ridges, bringing to the surface all the fertile portion of the soil. Another method is to bring up grass, and is in a foul state, is called ribbing. The plough brings 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 a new furrow at the back of a stitch, but it takes another slice at some distance, and then on 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 then the soil is broken to pieces by heavy drag-barrow, the land can be cross-ploughed and cleaned or followed in dry weather.

There is another mode of ridging, when the land has been ploughed once or twice in order to expose it to the frost in winter, and to mellow it. The land is then turned 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 an excellent practice for turnips, if the land has been well cleaned. The manure, being distributed in the deep furrows, is covered by the ploughright and left, or at one operation by a plough with a turn-furrow on each side, which divides the ridges, and leaves this contiguos 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 tilage 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 considerable saving of time, and the soil is not brought up, so that little is gained. The double ploughs are therefore in use. But there are instruments which cultivate the earth, stirring and pulverising it much more speedily than these ploughs can do, the whole ridge being ground to the depth of seven or eight inches, going over the width 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-land, 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 furnish excellent material.
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 Deanston 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 common 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.

Fig. 22.

Stracey’s Backheath Plough.

Many different ploughs have been invented for the purpose of saving labour in draining land. As they all cut out a slice from the bottom of a furrow and cause it to 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 intended 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 furrows 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 coulter. 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. 23.

Lambert’s Mole Plough.

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 expeditious means of temporarily draining land. It can only be done when the soil is moist and gives way without cracking, 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 plough 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, 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 Cambridge in 1846, 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, disguised in antic dresses, like jack-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. Tussor, in his Five Hundred Points of Husbandry, mentions Plough-Monday among the ploughman’s feast-days.

(1) (Brand’s Popular Antiqu., 4to, 1813, vol. i., pp. 396, 397; Brady’s Alien’s Calendar, 5vo, 1815, vol. i., pp. 151, 152; Lady’s Dictionary, by N. B., 8vo., Lond., 1894, p. 277.)

PLOVERS, CHARADRIIDÆ, a family of birds placed by Mr. Vigors in the order Grallatores, or Waders. The genus Charadrius, including the true Plovers, the Dotterel, the Sea-Lark, the Sandering, the Stone-Curlew (Edic-
The Long-legged Plover (Himantopus), and the Spur-winged Plover (Charadrius Spinosus), was placed by Linnaeus, in his Systema Naturae, between the genera Tringa and Recurvirostra [Avocet], in his order Grallae.

Grallae is the family of Plovers (Les Ruiviers, Charadriens, Linn.), comprising those genera which want the hind-toe, and have a moderate bill compressed and convex at the end, consist of two genera, Bidicenmus, and the Plovers properly so called (Charadrius, Linn.), embracing the Grallae, or of that of the plain. The Spur-winged Plovers are succeeded by the Vanellus (Vanellus, Bechtt., Tringa, Linn.), consisting of Squatarola, Cuv., and Vanellus, Cuv.; which are followed by Haematopota and Curaurus; or which, in the Racer, exhibit an appearance 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 blue and white, with a rather short bill, and very sharp feet. They are to be found in the sea-shore, to feed upon the marine insects concealed beneath. The Couriers (Tachydrus, Ill.), although confined to the Old World, seem to be very widely distributed. The species occurs occasionally in the British Isles. The Racer, or Terrapin (Cardinmus, Ill.) is often shot in England, and the others, four or five in number, come from the African deserts and the sandy districts of India (Ciconiurous); they are closely united to the Pratincoles, or the wider parts of the general body. They have their wings very long, their bills short, and their tails generally forked; they are small birds, and fly with great celerity. Our beautiful Lapwing forms a typical example of this family, and Vanellus (Vanellus, Cuv.) form a numerous group, very elegantly although not richly coloured, and dispersed with little or no variation of form, over the whole world. The feel, as in the Spur-winged Plovers, are only three, and the wings are much divided; sometimes there is a small membrane between the outer and the middle toe, but this is usually wanting.

We have two elegant little species on the British coast, and some others occur in Southern Europe. The Longshanks (Himantopus) have been shot in this country, and a few occur in Southern Europe. The Longshanks (Himantopus) have been shot in the country, and a few occur in Southern Europe. The Longshanks (Himantopus) have been shot in this country, and a few occur in Southern Europe.

Mr. Swainson, in the order Grallae, or Plovers, on one side, and to the Ardeids by means of the true 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 species habit 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 Bidicenmus to have an affinity with the Ardeids. It is a jumping point of our Ardeids; and that they thus connect the present family with that. (Classification of Birds.)

Mr. Swainson thus characterizes 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 order Ardeids, at the commencement of the volume, after the Ardeids, and before the last of the order Grallae, and embraces the following genera and subgenera:

Squatarola, Charadrius, Vanellus, Bidicenmus, Tachydrus, Glareola, and Numitornis.

The Prince of Musignano (C. L. Bonaparte) makes the Charadrius the first family of the order Grallae, Linn., and he comprises within it the genera Otis, Bidicenmus, Charadrius, Curaurus, Glareola, and Numitornis. In this order, the Charadrius, Squatarola, Vanellus, and Numitornis, form a—

The first family of the order Grallae, according to Mr. G. R. Gray's arrangement, is the Charadriidae, which are divided into the following subfamilies and genera:

- Charadriinae
  - Charadrius
  - Charadrius
  - Charadrius
- Numitorninae
- Numitornis

And North Wales.
Portion of the neck white also, but varied with great black and yellow spots; throat, front of the neck, and all the other parts deep black.

Periodical variation during the moult.—White and black mingled are often seen on the lower parts of the feathers. This liverty is always to be seen on the young birds, even after their first spring moult. (Temm.)

In this state the bird is, according to M. Temminck, Charadrius apricaria, Gmel.; and some Pluvier doré à Gorge noire, Buff.; all Pluvier, Temm.

In the fourth part of his ‘Manuel,’ just published, M. Temminck adds the following synonyms: Charadrius curatus, Naum.; Der Flatenflügge, Hochseermige, Mittleres, und Hochgebirgiges der Inselgenossen, Brehm; Brockflugel, Nils.; and Finvær, Savi.

This species is also Le Pluier Guillotot de Belon (who says that it is named Hunter, ‘pour ce qu’on le prend mieux en temps pavés qu’en neuf’) and he gives an amusing account of the mode of taking these birds by the peasants); Der Rechte Brachgolfel der Germanen; Hanck’s Eyes of the Hudson’s Bay residents; Sauty’s yr aur of the ancient Britons.

Habits, Food, Reproduction, &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 shallow depression in the ground; and the eggs 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 creamy-yellow inclining to green, with a rosy appearance. The hatched young are of deepumber brown. The young, when naked, are covered with a beautiful particoloured down of bright king’s yellow and brown; they quit the nest as soon as hatched, and follow their parents till able to fly and support themselves, which is in the course of 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 down and being unable to fly, which is the most frequent, and 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 invariably runs to some distance from her nest 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 barks. 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 a moderate 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 followows and the newly-sown wheat-fields, where an abundant supply 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 haunts 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 are often met with in large flocks, and are particularly known to the account of Sir John Neville, of Chete Knight, of the viands, &c., used at the marriage of his son-in-law Roger Rookey and his daughter Elizabeth Neville, the 14th of January, in the seventeenth year ‘of the reign of our sovereign is King James,” we find in the second course, ‘Hie, plow, 6 of a dish.’
and among the charges, 'Item, in plover, 3 doz., 5s.' In the charge of the said Sir John Nevile, at Lammas Assizes, twentieth of Henry VIII., we also find 'Item, 6 doz. plovers, 15s.' Four hun- dred plovers were presented among the 'goodly provision' at the inquisition of George Nevell, archbishop of York, in the reign of Edward IV. Drayton, in his 'Polychromia,' makes Lydword boast that her 'fowles' 'more syrie are' than those of Holland (Lincolneshire):

   'And make fine spirits and blood,
   For none this bathe thine side, in not is to be sought.
   More than on any earth, the plower 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., 1832). Temminck expressly says that the species is the same in America and Asia. Sabine also (Party's First Voyage) makes Wilson's Charadrius apterus and the Golden Plover identical, and states that it breeds in the swampy parts of the New-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 Hudson'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 greatly eaten by the Indians of the far countries. They make but a short stay in Pennsylvania, and are said to winter beyond the United States. (Paucis Borealis-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, best with in almost every part of the world, particularly in Asia and Europe, from Kamtchatka to China, as well as in the South Seas, 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 Pluvialis, Linn.; Charadrius Vir- ginicus, Borkh. (Charadrius Pluvialis, Will.), and Colonel Spix notes the birds of the Orinoco, and the Brazilian, as being identical with the Javanese specimens, smaller indeed than one North American specimen and two English specimens in the British Museum, but absolutely identical with other Brazilian specimens. He says that it is rare in Bahiam, 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. Bürger; 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. marmota- rius of Wagler. Instead therefore 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, Gen.)

Example, Charadrius Morinellus, Linn.; Eudromias Morinellus, Boie; Eudromias Morinella montana et stolidv, Brehm, according to Temm.

Description.—(Winter Plamage.)—Top of the head and occiput blackish; the sides of the head and underparts of the neck blackish-ash tinged with greenish, all the feathers of those parts framed as it were with rusty colour; breast and sides red, the sides, in particular, on the back of the thighs, red and the middle of the belly yellow white; shaft of the first quill white, except towards the end, tail terminated with white; bill black; iris brown; feet greenish-ash. Length more than 8 inches.

P. C., No. 1138.

Charadrius Pluvialis, Golden Plover.

a, Summer dress; b, Winter dress.

The young have the tints more ashy; 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 ruddy.

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 ashy; feathers of the mantle and wings bordered with very deep ruddy; on the breast a narrow brown band, succeeded by a large white cincture; part below the breast and sides very bright ruddy; 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 moulting the plumage varies considerably in different individuals. (Temm.)

This is the Pluvier Guignard and Pluvier solitaire de la French; Piéter de cormione and Piéter tortolino of the Italians; Der Dumme Regenpfeifer of the Germans; Dotterel, Dotterell, and Dotrell of the modern British, and Huttan of the antient British.

Habits, Food, Reproduction, &c.—Drayton sings of this bird—

The Dotterell, which we think a very dainty dish,
Who, taking makes such sport as none more can wish,
For as you creep or crawl, or fly or stoppe, or goe,
So marking you (with care) the spitt bird doth doe.
And setting every thing, douch never mark the net,
Till he be 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 Dotterel,' 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 Charadriidae), 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 as well as those 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 observed. The food consists principally of insects, slugs, and acorns, and it is ascertained that a 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 maroon olive-coloured eggs are sprinkled with large dots and numerous spots of deep brown-olive.

Geographical Distribution.—Mr. Selby notices the Dotterel as particularly abundant in Northern Asia and the eastern parts 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 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 mountains, and, in no great number, on the high mountains of Bohemia and Silesia, at an elevation of from 4500 to 4800 feet. In this country, Sussex, Hampshire, Wiltshire, Berkshire, Cambridgeshire, Lincolnshire, Derbyshire, Yorkshire, and Northumberland possess it. Dr. Latham states that in the elevated district of Braemar, Aberdeenshire, these birds hatch their young on dry mossy ground near to, or on the very summits of the highest parts, sometimes in the tufts of little short heather or moss. The female sits twice and three, and the young appear about the middle of July. Mr. Yarrell exhibited eggs of this bird, belonging to Mr. Hayesham of Carlisle, obtained on Skiddaw in the summer of 1836. 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 one 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 Northumberland Bold Book, and enumerated among the birds admitted to the high (his Lordship's) table. They now find a ready sale in the London market at about six shillings a couple.

**Dotterell in nuptial plumage.**

That pretty little Plover, The Ring Dotterell, comes under the genus **Gallinula**, Moehr.

**Genus 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, tumid and arched with the tomis bending inwards. *Nasal groove* wide, half the length of the bill. Mesorrhynchin depressed below the level of the tip. *Nostrils* longitudinally pierced in the membrane of the groove, linear, obtuse. *Wings* rather long, acuminate, with the first quill-feather the longest. *Legs* slender, of mean length, naked above the tarsal joint. *Feet* four-toed, three before and one behind; front toes joined at their base by a membrane, that portion of it between the outer and middle toe being the longest; hind toe very small or rudimental. *Tarsi* reticulated. Plumage thick, close, and adpressed. (Gould.)

**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, and under 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 spots; upper parts blackish-brown, variegated with greenish-yellow spots, but the whole of the feathers terminated 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; male white but reddish towards the end, striped with brown bands, which are pale and few, and placed on the lateral feathers; bill black; iris blackish; feet ash-brown. 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; occiput, 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-covers 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 tint varied with whitish; also a little whitish at the extremity of the quills; transverse bands of the tail grey.** (Temm.)

In the first of these states of plumage the bird is the *Tringa Squatarola*, Gmel.; *Le Vanneau Vario*, Buff.; and *Grey Sandpiper*, Lath. (Syn.)


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 lower parts 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
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 hynomelas of Wagler, and the Grey Squatorolo of Shaw. It appears to be the Pluvier Gris of Buffon. The French name is Pluvier de Motteux, &c., is the following loyal quatrain under the figure of the bird—

' De nuit secoué, de jour en compagnie,
Va le Pluvier soyant son appelieur.
Par la voûte, que c'est bien en peine,
Qu'une gent soin par un Roy gouverneur.'

M. Temminck, who, in the fourth part of his Manuel (1840), protests against the generic separation of this form, not without a passing but sweeping censure on 'toutes les autres coups nouvelles,' adds to the synonyms Squatorola varia et Helencica, Brehm; Kirke Beugynitzer, Naum; Piperaessa, Savi; and Sprachung Vinya, 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 'oazy bays, or at the mouth 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, the 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 begin to sensibly 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. After 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 on the shores, to feed upon the small shell-fish and marine insects (crustacea). 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 on 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. Cartrain 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 Toster-aree, or Toogler-aiach of the Esquimaux, says that it is observed in the far countries of America placed to those frequented 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 Fort Wayne, Indiana, in August, 1832. Capt. Glasson, 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 margins of the marshes immediately to the south-west of Fury Banks, 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 flocks 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 fly 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.)

Squatorola cinerea—Grey Plover, or Grey Lapwing.

a, spring plumage; b, winter plumage.

Vanellus. (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. Notrile basal, linear, pierced in the membrane of the nasal groove. Legs slender, with the lower part of the tibio 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 notched or suddenly narrowed towards the base, and shorter than the fourth and fifth, which are the longest. (Gould.)

Example, Vanellus cristatus; Tringa Vanellus, Linn.

Description.—Male in winter plumage.—Occupied feathers very long, loose barred, 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, shoulders 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

202
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 Mesara, Dixon and Ross as occurring in great numbers near Erzeroum, arriving at the end of March, and departing at the end of November. During the summer it frequents the river (Karack-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-Cooshko (Maiden's Bird), or Kohauma Cooshko (Bath-bird). Vanellus Keptakaucha, and Charadrius Marinellus 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 Sietold and M. Bürger; and Temminck states that individuals from that locality differ in nothing from those of Europe.

Spring or nuptial plumage.—This is scarcely distinguishable by the greater brilliancy of the reflections on the back and wings, and by the deeper intensity of the black of the throat and breast. The crest however is longer, and the colour of the feet bright reddish.

Accidental 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 Vaneau of the French; Pwanaella commune of the Italians; Gbalebi Kirby of the Germans; De Kiewit of the Netherlands; Pescante, Pesret, Bastard Plover, Lapwing, and Pype of the modern British; Cornache gel of the ancient British. It is also the Wipa, Krouppa, and Blaechs of the Swedes; Ede and Krui of the Danes; and, according to Belon, Aix* (Aix) of the Greeks (Aristot., Hist. An., viii. 3), Pavo runzino and Paruchello of the Italians; and in some provinces Dizhati and Rapecheu 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 congeners 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:—

In the 'Northumberland Household-Book,' 'Wypea' are

* Quere lames.
† But according to other readings it is the oualieres, or Sea-eagle, to which these habits are ascribed.

Vaneau citratin.

This species is confined to the Old World; but Capt. P. R. King, R.N., has described a second species from the Straits of Magalhaeas. It is figured in the 'Illustrations of Ornithology,' under the name of Squatarola cineta.

Philomachus, Möhr; (Hoploteus, Bonap.)


Description.—Male and Female in perfect plumage.—All the summit of the head and occiput, throat, front of the neck, breast, sides, quills, and three-fourths of the tail black; region below the eyes, lateral base of the bill, sides of the neck, nape, long feathers on the sides, inside of the wings, the whole border of the wing, thighs, abdomen, rump, and first fourth of the origin of the tail pure white; the whole of the mantle, quills nearest the body, as well as all the covert, grey-brown, more or less deep orumber-colour; two lateral feathers of the tail terminated with white. Length ten to eleven inches.

This is Le Pluvier à aigrette, Le Pluvier huppé de Perrin, and the Pluvier armé du Senegal of Buffon; Spur-winged and Black-breasted Indian Plover of Latham.

Habits, &c.—Little or nothing is known of the habits of this species, with the exception of what we learn from Dr. Latham, who says that it inhabits Russia, and is frequent near Aleppo, about the river Coie. 'The Spur-winged Plovers,' says he, 'are very numerous and exceedingly noisy, have a hasty and continual movement of the head and neck, drawing them up briskly, and then stretching them quickly forward, almost as if they were making hasty and eager bows.'

Geographical Distribution.—M. Temminck gives Egypt and Senegal as the habitat, and says that it shows itself accidentally in Italy, but is said to be more common in the
of these birds to the neighbourhood of his favourite Selborne in his usual characteristic 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 Calidris Himantopus, were shot upon the verge of Frimsham pond, a large lake, near the town 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 seen them, he was curiously ascertained the six to remain 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 shanks had been fastened on to the head, for the beholder, they were legs in caricatura; 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 were of the plover family, and might with propriety be called stilts 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 this cock flamingo which 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 fraction more than the ounces and a quarter; and if you would try the experiment in still larger birds, the disparity would still increase. It must be matter of great curiosity to see the Stilt Plover move; to observe how he can wield such a length of lever with such feeble muscles as the tilium seems to be furnished with. It is the best of all the birds, except 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 in 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 plant as if cut out of a thong of leather. Neither Willughby 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. Hessei Cassini says it migrated through Russia; and in the autumn it was observed in 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 Æthiopes: 'Himantopodes longipes quidam, quibus ueste et ingredi nobis non est.'

Pennant says, 'These birds are extremely rare in these islands. Sir Robert Sibbald 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 restricted to a limited 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 Plovers. Its affinity to the Plo-
vers is shown, he adds, in the form of its feet, and the pas-
sage to the genus Charadrius is effected through the
interposition of some of the longer-legged species, and by
the members of the genus Fluvianus. It also connects, he
thinks, the Plowers with certain groups of the Scolopaci,
as it shows an indirect affinity, both in form and manners,
with the Aves (Scolopacidae). It is in this genus, which Wilson
led to place 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 Atlantic, of intestine line and fresh-water lakes, feeding
upon worms, insects, larvae, &c., which are obtained in the
muddy shallows of the waters they frequent. Mr.
Selby further remarks that their moult is presumed by Temminck, for the species do not appear to be established by actual observation. (Illustrations of British Ornithology.)

Mr. Gould (Birds of Europe) states that the genus Hima-
tonopus, although widely distributed, contains, he believes,
only two well authenticated species, namely, H. melano-
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 too wide a range to be deficient in all. 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 Africa, India, the islands of the Indian Archi-
pelago, 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
habitats are the low flat shores of lakes, rivers, and
sea. 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 may pass the winter. There it fearlessly wanders 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 span
exceed the tail, and it passes through the air with astonish-
ing rapidity. When on firm ground, it appears as if tottering
on long and awkward stilts, but firm ground is not its congenial
habitat. The egg, as far as we are aware, is a single egg.
Mr. Thienemann measures one inch nine lines in length by one inch
three lines in breadth, of a pale bluish-green, spotted and speckled
with dark brown.

The species is recorded in the catalogue of birds collected
on the Gauges between Calcutta and Benares, and in the
Vindhyahills between the latter place and Gurrah Mundel
on the Nerbudah, by Major James Franklin, F.R.S.
(Zool. Proc., 1830-31.) Lieutenant-Colonel Sykes notes it in
his 'Dukhn' 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 nomage, specific differences may
be seen in the iris, mandible, or crinum of 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 stomach. These birds are constantly found
with visceral worms of the tape and capillary kind. (Zool.
Proc., 1832.) Mr. Thompson, in his 'Catalogue of Irish
Birds,' records that, in the winter of 1823, a bird of this
species was found by Mr. Hall in the neighbourhood of Youghal.
(Zool. Proc., 1834.) Messrs. Dickens and Ross saw it at
Erteroom at the end of July. It was not very common, and
haunted the borders of the river. There was a naked rim round the eyelid, of a bright vermilion colour. (Zool.
Proc., 1839.) It has also been noticed at Trebizond by Mr. Keith
Abbott. (Zool. Proc.) Colonel Sykes, in his observations
on Captain Spilier'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 Wiard.
The only difference is, that the Egyptian and Brazilian birds are
larger. American specimens, also received by M. Tem-
minck, differed in nothing from those in Europe, and he
adds that it is ascertained to be the same bird as that
brought out India, but he has had no means of verifying this.
The Long-legged Plower figured by Wilson (pl. 58, f. 2) be-
considers distinct and new. In the last part of his 'Manual'
(1840) he states that the Japanese specimens exhibit no
difference, and that the bird makes its nest upon a little
emineness constructed in the marshes, laying four eggs, of
the size and form of those of the Avocet, of 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 con-
formed with Him. melanocephalus, is different, and he names
it Himantopus leucocephalus. (Zool. Proc., 1837.)

The Prince of Musignano, who places the form among
the Recurvirostridae, makes Himantopus nigricollis (Rec-
curastra himantopus, Wills) and Himantopus Mercurussa,
Brisi, from the north and central and southern part of
America respectively, distinct from Him. melanocephalus.

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.

Himantopus melanogaster.

The Pratincole (Glareola), the Sea Pigeon (Himantopus),
and the Turnstone (Spreagla), will be treated of under
their respective titles.

PLOWDEN, EDMUND, serjeant-at-law, was an emi-
nent lawyer, who flourished in the reign of Mary and the
early part of that of Elizabeth. He was the representa-
tive of an antient family, Plowden of Plowden in Shropshire.
He was born about the year 1517, and after having in early
life studied medicine and surgery, first at Cambridge, and
afterwards at Oxford, suddenly gave up his profession, and
changed the course of his studies to the common law
when he was thirty-five years of age. But this state-
ment is totally at variance with Plovdon's own account
of himself, for he says, in the preface to his 'Commen-
taries,' that he entered on the study of the law in the
twentieth year of his age, and in the thriteth of the
reign of King Henry VIII. (Preface to his Comm.,
which is well worth reading.) He was twice a reader of the Middle
Temple, and about the close of the reign of Mary was called
to the degree of serjeant-at-law; but he was omitted in the
call of serjeants in the 2 Elizabeth, possibly because, as is
suggested in a note to Wood's account of him, he was an
PLU

Ickworth Imperatrice.
Cooper's Large Red.

§ 4.
Blue Perdrigon.
Shropshire Damson.

§ 5.
Green Gage.
Knight's Large Green Drying.
Lucombe's Nonsuch.

§ 6.
Dorset d'Or.
Miallelle.
Washington.

§ 7.
Coe's Golden Drop.
St. Catherine.
White Magnum Bonum.

§ 8.
Gumarena.
White Perdrigon.

The cultivation of the plum is not difficult. The tree is harder than the cherry-tree, at least than that producing the Bigarreau and Heart-cherries; but the blossoms are equally tender. The winter at Riga does not kill the plum-tree, but the cherry-trees just mentioned and many varieties of the pear and apple trees are killed there. The severe frost of January, 1836, 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.

GUMARENA.

** Fruit Pale.**

a. Round.

Shoots smooth. § 5.
Shoots downy. § 6.

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.
2. Nectarine plum.
5. Royale Hâché d'Orleans.
6. Early Orleans.
7. Coe's Fine Late Red.
8. Wine-sour.

Blue Imperatrice.
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 Ardmairal
in Norway, in quartz rock; and in the United States, its
defersal and basaltic, 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 will be in the centre of gravity of the weight
and 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 re-
quire any explanation here. We shall briefly mention the
matter of applying the plumbline to astronomical instru-
ments, and it is necessary to mention it, as in most cases
it has been superseded by the spirit level, or observation
by reflection, and so is not described in the account of the
instruments.

In the earlier astronomical instruments, where the tele-
scope 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 oscilla-
tions, and the exact bisecction of the dots by the wire was
inspected by means of microscopes. The plumbline was brought
as 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 bisecction of
the dots by the plumbline should be noted at the same time
as the object is observed by the telescope. As the plumbline
cannot be observed when the instrument was something in the
eye of the tele-
scope, two other dots were frequently introduced, which, being
verified by the principal dots, could be used for the same
purpose of verification; and it is evident, that while the frame-
work 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
18th century for rectifying instruments lying in latitudes,
surmounting 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
in which each fractional part of the altitude, the fractional part
of the altitude, the fractional part of the altitude, or the fractional
of the altitude, as from the superior stability of their frame,
standing circles can scarcely be liable to any sudden errors, but
the present mode of observing by reflection does away with
the use of the plumbline altogether in instruments of this
construction. In circles revolving freely in azimuth, the
following modification of Ramsden's plumbline, which was
introduced by Troughton, is much to be preferred to it.

**Plumbago capensis.**

1. A flower deprived of calyx and stamens: 2. the ovary, and stamens sur-
rounding it; 3. a vertical section of the ovary, showing the peculiar position
of the ovule.

**PLUMBA/GO—Graphite, Black Lead.** This substance
occurs crystallized and massive. Primary form a rhomboid.
Occurs in imbedded hexagonal prisms. Cleavage parallel
to the terminal planes of the prism, very distinct, and the
lamina flexible. Fracture granular and uneven. Hardness
1·0 to 2·0. Colour steel or blackish-grey. Streak black,
shining. Lustre metallic and glistening. Inconstant to the
touch. opaque. Specific gravity 2·95 to 2·45.

Found in Greenland and in the neighbourhood of Phila-
delphia in the United States.

**Massive varieties** occur amorphous, in reniform masses,
and irregular nodules. Structure foliated, granular, compac-
t.

Found in various parts of the world. That of Borrowdale
in Cumberland is of the best quality for what are called
black-lead pencils; while the commoner sorts are used for
making melting-pots, for diminishing the friction of ma-
achinery, and for protecting iron from rusting. That which
is imported from the East Indies is remarkably soft. Plum-
bago conducts electricity, is infusible, and very difficult of
combustion.

Professor Vanuxem has analyzed several varieties of
plumbago. No. 1 was a pure specimen from Borrowdale,
and No. 2 from Bustleton, Pennsylvania.

<table>
<thead>
<tr>
<th></th>
<th>No. 1</th>
<th>No. 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon</td>
<td>88·37</td>
<td>94·4</td>
</tr>
<tr>
<td>Silica</td>
<td>3·10</td>
<td>5·0</td>
</tr>
<tr>
<td>Alumina</td>
<td>1·00</td>
<td>2·0</td>
</tr>
<tr>
<td>Water</td>
<td>1·23</td>
<td>0·6</td>
</tr>
<tr>
<td>Oxides of iron and manganese</td>
<td>9·6</td>
<td>1·4</td>
</tr>
<tr>
<td></td>
<td>99·30</td>
<td>99·0</td>
</tr>
</tbody>
</table>

It was at one time supposed that plumbago was a carburet
of iron, but, in the opinion of Berzelius, the experiments of
Karsen 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
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 it is determined by measuring the angular distances from two successively fixed positions of the circle, we have the true distance measured 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 plumbine is to set the axis true. But if the axis is not vertical, it is attached to the upper part of the instrument, which revolves freely in azimuth, the plumbine hangs in the tube over a notch, the weight below being wholly immersed in water. After the instrument has been properly set, it is turned until the tube crosses it at right angles to each other 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 lead pipe in which the dot of the plumbine on the plumbine, and at the other end a micrometer to note the alterations. The dot is a little excentric, 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 plumbine, 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 plumbine in both positions, and the dots would be still bisected. If not, by turning the instrument round, it is easy to bisect the third way to bisection, and then finally bisected by their own adjustments. When this is done, the axis is truly vertical. The operation must of course be repeated and continued until the dots bisected by the plumbine in every position of the instrument are truly vertical.</p>

[Circle.] But though Troughton's plumbine is exceedingly beautiful and accurate, we greatly doubt whether it is so effective as a spirit-level. It is much more troublesome to use. Thus 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 likely more from temperature than from the level. We should therefore strongly dissuade any one from applying the plumbine 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 terycyr. [Zenzire & Sother.]</p>

(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,' Brewer's Cyclopaedia.)

PLUTARCH was a native of Chaeronea in Boeotia. The time of his birth is uncertain, and can only be approximately ascertained from the circumstance stated by himself, that he was nineteen years of age at the time when Nero was making his progress through Greece, which was in the twelfth year of the emperor's reign, or A.D. 66 (Hist. rob. E1 νπιν Δήμαρχης, c. 1). The family of his father, however, was of some consideration in Chaeronea, and had held a number of offices in the state. Plutarch mentions his great-grandfather Nicarchus, who told him what the citizens of Chaeronea suffered from Antony's soldiers; and he speaks of his grandfather Lamprias as a good-humoured man and an agreeable companion. He has not mentioned his father's name in his extant works. He had two brothers, Timon and Lamprias, to whom he was much attached. When a young man, he was sent with another person on a mission to the procurator of the province. His companion was from some cause left behind, and Plutarch executed the business himself (Iul. rard παραγωγής, c. 20).

It has been commonly asserted that Plutarch visited Egypt, but there is no authority for this assertion, and such a conclusion cannot be drawn, as it sometimes has been, from such slender premises as are furnished by the fact of his writing an essay on Isis and Osiris. Plutarch visited Italy and the Scottish islands; 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 reason that he gives for not doing it appears to be a serious one: 'he had so many public 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 became acquainted with the Latin language, and was very imperfectly acquainted, with the antient institutions which formed the groundwork of the Roman polity and the Roman character. It has been objected with reasonable probability that his moral writings contain nothing of the matter which he delivered 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 uncertain. It is safe to say that he crossed the Alps with the passage of his old age, and that all of them were written or finished in his native city.

It is generally said that Plutarch was the preceptor of Brutus by Nero's command, and was brought to Rome as a hostage; but these facts rest on the assertion of Suidas (Δημοσθένης), and on an extant letter addressed to Trajan, which is attributed to Plutarch. It is true that in the dedication of the Apotheogems (Ἀποθεώματα ἀπόστατου και στρατηγοῦ) to Trajan, Plutarch says nothing about either of these circumstances; but then it is argued that the Apotheogems 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 Apotheogems, or at least the dedication prefixed to them. But this is not the case. In the letter to Trajan, there is an unambiguous and conclusive internal testimony of being a fabrication. Besides this, it only exists in Latin, and in the 'Policraticus' of John of Salisbury; the Greek original has never been produced, and it is not known where John found this letter. Plutarch seems to imply a distinction between 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 (σερπούραμένης, c. 15); and he enjoyed the friendship of several distinguished Romans, as Arulenus Rusticus, whom Domitian put to death. Sossius, the nephew of Cato, and Sossius Senecio, a man of consular rank, whom he addresses in the introduction to the Life of Theseus, and elsewhere in his writings. Among his contemporaries at Rome were Persius, Lucan, the younger Pliny, Martial, Quintilian, 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 also had the title of Consul. Plutarch had a wife, Timoxena, to whom he was tenderly attached, and four sons, and a daughter, Timoxena. Two of his sons died before him, and he lost his daughter while an infant. It was in connexion of this with the death of his daughter that affectionate letter of consolation, full of good sense, in which he has perpetuated the virtues and fortitude of a most exemplary wife and mother (Παραθεοτόκης πρὸς τὴν ἱδραυνα). 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 so 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' (Βίοι Παράλλαξια), which contains the biography of forty-six distinguished Greeks and Romans, besides the Lives of Artaxerxes Memon, Aratus, Gelas, Orpheus, whose work is last 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 biographies are—Theophrastus, Democritus, Scipio Africanus, Pericles and Fabius Maximus, Alcibiades and Coriolanus, Timoleon and Eumolpus, Pelopidas and Marcellus, Anaxagoras and Catilina, Pythagoras and Marius, Taxile and Sulla, Cimon and Lysander, Nicies and Crassus, Eumenes and Sertorius, Agesilaus and Pompeius, Alexander the Great and Julius Caesar, Phocion and Caton, Aratus and Cato Major, Pyrrhus and Marius, Thrasylalus and Crassus, Lydius and Sulla, Scipio Africanus, Hanno and Menippus, Gracchi, Demosthenes and Cicero, Demetrius Poliorcetes and M. Antonius, Dion and M. Brutus. The biographies of
Epsilonion, Scipio, Augustus, Tiberius, Caligula, Clau-
dius, Nero, Vitellius, Heliodorus, Plutarx, Cynics, Di-
Diptantos, and the poet Aratus, are lost.
Plutarx's son Lamprius made a list of his father's works,
himself with the innocency of commonplaces. Whatever he says is manly and invigorating in thought, and clear and forcible in expression. A word 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.' In 'The Life of His Worship' (1609) we find an account of his death. 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, so was vastly furnish'd with improvements, that he was uncertain 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 some memorial of his greatness.' (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,' ixxxii., Gr. Venetia, 1509, fol. It was afterwards printed at Basel, by Froben, 1542, fol., and 1574, fol. The only good edition of the 'Moralia' is that printed at Oxford, and edited by D. W. Boynton, 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 Wittembach were printed at Leiden in 1709.

The first edition of all the works of Plutarch is by H. Stephens, Geneva, 1672, 13 vols. 8vo., which is said to be correctly printed. This edition was reprinted several times. A new and more accurate 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. Hutton, appeared at Tübingen, 1791-1805, 14 vols. 8vo., and a revised edition in 1859. The critical edition of all the works of Plutarch is still wanted.

The 'Moralia' have been translated into French by Amiot. Amiot's complete translation of all the works was reprinted at Paris by Didot, 1818-1820, 25 vols. 8vo. The 'Moralia' have been translated into German by Kalsasser.

PLUTO (Plūtō), more frequently called by the Greeks Hades ('Adēs), 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, is a word of uncertain etymology. Pluto is supposed to be the name which the ancient Britons gave to their wandering god (Plūtrās), since the precious metals 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 ὀρυξ and orco, and is 'a restrainer.'

Pluto is represented by the antient writers as a gloomy deity, inexpressible to the prayers of mortals, and hated by the human race above all the gods. (H., ix. 158.) His wife was Persephone, called by the Romans Proserpina. (Proserpina.)

In the 'Iliad' (ix. 569; xx. 61; xxxiii. 100) and in the 'Theogony' of Hesiod (455, 767), the abode of Hades is said, as has been already stated, to lie beneath the earth; but in the 'Odyssey' it is placed in the regions of darkness beyond the stream of ocean. (Od., x. 575; cxx. 8.)

In later writers the word Hades also signifies the abode of the souls of the dead, and is therefore used in allude to the temples and statues of Pluto appear to have been very few. Paeanias relates (i. 26, § 6), that there was a statue of Pluto in the temple of the Eumenides on the Areopagus of Athens; and a statue of Persephone is also mentioned by 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 geologic date are the rocks that are used in many modern works. In publications relating to the controversy between Wernerians and Huttonians, the former are often styled Neptunists, the latter Plutonists. In Brongniart's 'Tableau des Terreurs,' there is a description of a moraine (p. 93) that there are the special rocks of fusion, but placed with them in class of Typhonian rocks. Granite, syenite, porphyry, euriite, and pitchstone are Plutonic rocks. The term is not synonymous with the word Hypogene, as defined by Mr. Lyell.

PLUTUS (Plūtōs), the god of wealth, is said by Hesiod (Theog., 969) to have been the son of Demeter and the hero Jasion. He appears as an actor in the comedy of Aristophanes named after him; but we have no particulars respecting his worship. In the story of Demeter and Theseus, Plutus was represented as a child in the arms of Fortune (Paus., ix. 16, § 1), and at Thebesia in Boetia there was a statue of Plutus placed by the side of one of Abase and Eran. (Paus., v. 26, § 5.)

PLUVIALIS. (Plovīnus.)

PLYGLOTOPIUS. (Pylgōtopi-us.)

PLYGLOTOPIINARIS. (Pylgōtopi-ināris.)

PLYMOUTH, a seaport, corporate, and market town in Devonshire, 19 miles N.W. by N. of the town of Barnstaple. It is a direct line of communication with the great city of London by the coaches of Mr. Musson, his Lordship's, and the London and North Western Railway, London, and 215 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, Uxbridge, Exeter, and Ashburton; in 50° 17' N. lat. and 4° 8' 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 Tameworth; 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 which the town is built. In 1352 the town, with 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 Valletors, as the town of Plympton, and it was from the reign of Henry IV that the town was called Plymouth. Before that time the name was superseded by that of Plymouth, which the town still retains. Plymouth was attacked by the French in the reign of Edward III., but without success. In the reign of Henry IV. the attempt was renewed, and the town partly burnt, but the castle and the highest part of the town were not taken. In 1438, in the reign of Henry VI., the town was incorporated by charter, and walled in; but it is supposed to have been a borough by prescription at an earlier period. On the dissolution of the number of the inhabitants 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 benefitted 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 1586 the Sound was closed by the removal 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 had been re-embazoned as a royal fort, 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. On the point at the entrance to Sutton Pool is the citadel, and to the north of it lies the town, with a length of a little over a mile, 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. Mary, which are joined by a joint street of 3,060; 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 commencement of the present century, the chief improvements were 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, new and handsome road forms have been constructed by the corporation. The town is well lighted with gas; the supply of water is under the direction of the corporation, and is still supplied by Sir F. Drake's channel.
or 'least'; it is received in three large reservoirs, one of the
which belongs to the 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, which is a spacious structure of
antient foundation and varied architecture, having a square em-
blattled tower. In 1829 its interior was repaired and em-
bellished at an expense of upwards of 44,000, but the original
order is still preserved. The church organ, with pipe organ, will
possess 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 exer-
barant loyalty of the period led to legislation to help
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
chapel for Baptists (two), Independents, Presbyterians,
Unitarians, Quakers, Wesleyan, Warrenite, and Brynante
Methodists, and other dissenters, and a Jew's synagogue.
The foundation stone of a new church 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 cor-
poration, and at an expense of 1,000l. The royal baths, the new hospital, the Athenaeum, or building of
the Plymouth Institution, the public library, the Free-
masons' Hall, and the Mechanics' Institute, are also worthy
of notice. Plymouth is in a room, and Brooklyn, or any structure, comprising the
central watchhouse and the town prison. The
grammar-school is a substantial stone building.
The harbour of Plymouth comprehends the Sound and
its outports, which stand on the
Edystone lighthouse, built in 1759, on a reef of rocks
stretching north and south 100 fathoms, and forming a slope
to the south-west. The Sound is a considerable inlet of the
English Channel, 8 miles wide from Peverell Point on the west to the opposite 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
Hay 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 estuary of the Plym forms the Sound, and has at its mouth
the rocky prominence of Mount Batten, opposite Plymouth. It is not so
deep as Hamspeze. 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 ac-
 commodation of the largest class of steam-ships 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 Hamspeze is four miles long from north to south, and of fifteen fathoms at abo,
there are moorings for nearly one hundred sail of the line.
The dock-yard [DEVONPORT] is on Hamspeze. The
harbour was long exposed to the heavy seas which rolled into the
Sound from the south-east, but 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
8 miles. Since then, a mile, viz., 1,800 lineal feet, 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 efficiency of the breakwater as a protec-
tion to the harbour has been proved in several severe

* The dimensions of the breakwater are, with the exception of the length, very roughly given. In an account published by John Deavenport (1819:
190), the breakwater was given at 1,800 feet, and at the top 13 feet; the depth of water at mid tide is 30 feet. Mr. Withington gives the dimensions of the breakwater as follows—breadth at the base 120 yards, at the top 10,
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
ports of Stonehouse and Devonport, is much greater
than during the present century, as appears from the fol-
lowing statement:

<table>
<thead>
<tr>
<th></th>
<th>1801</th>
<th>1811</th>
<th>1821</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plymouth</td>
<td>16,040</td>
<td>20,803</td>
<td>21,591</td>
</tr>
<tr>
<td>Stuke Damer-</td>
<td>22,747</td>
<td>30,083</td>
<td>33,578</td>
</tr>
<tr>
<td>all (Devonport)</td>
<td>3,407</td>
<td>5,174</td>
<td>6,043</td>
</tr>
<tr>
<td>East Stonehouse</td>
<td>43,194</td>
<td>56,060</td>
<td>61,212</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 40,000; that of Devonport (which has not
of late increased so fast) at 36,000; and that of Stone-
house 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 1833, which amounted to 59,000l. 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 coasting trade of all kinds, 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 Plymouth. There is a 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 Cawater, opposite
Plymouth, is a material chiefly employed for the break-
water. Near these quarries is a beautiful iron-bridge of five
elliptical arches over Cawater, built at the sole expense of the
earl of Morley. In 1834 a floating steam-bridge was
established across the Hamoaze between Devonport and
Torpoint, which crosses regularly every quarter of an hour,
and conveys the mail-coaches, carriages, horses, and pas-
sengers without the least delay or inconvenience. This
communication has proved the greatest benefit to the neigh-
bourhood. A railroad, to the extent of 34 miles, connects
Plymouth from Sutton Pool to Prince Town, near the
prison of war on Dartmoor. There are markets on Monday,
Thursday, and Saturday, which are crowded with the
fair.
The town-council consists of 12 aldermen and 36 council-
ors; the borough is divided into six wards. Quarter-
sessions and petty-sessions (twice a week) are held;
and there is a separate court, entitled the mayor's court, or the
borough court, for the trial of civil actions of the
kind of 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 670l. There is a heavy debt.
The borough, 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
parliamentary purposes are defined by the West Indies
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 was, in 1831, 1,400; in
1835-6, 1,776; for Devonport at the same periods, 1875-8;
and 208.

The living of St. Andrew is a vicarage united with
the chapelry of Penryn, of the clear yearly value of 590l.;
together with the management of the worship of the
chaple-of-ease, the clear yearly value of which is 146l.
The living of Charles is a vicarage, the clear yearly value
of which is 612l.; the value of the church in this parish is
100l. per annum.

Among the educational institutions of Plymouth were, in
16th century at the base 1200 yards, at the top (including the two arms) 1700; average height 14 yards; slope of the rise towards the sea, three horizontal to one perpendicular.
1833, in the parish of St. Andrew, the Orphans' Aid School, an endowed institution 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 33 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 schools. There were also three Sunday-schools. In Charles parish were an endowed school, with 60 boys and 60 girls; Dame Hannah Rogers's Charity, with 52 girls; a Lancasterian school, with 176 boys and 120 girls; and two 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 is 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 prisoners of the borough, and for the surrounding county.

PLIMPTON. [DEVTSHIRE.]

PNEUMATICI (οὶ πνευματικοί), a medical sect founded by Athenæus about the middle or end of the first century A.D. from a medical man named Herophilus. They were noticed in the life of their founder, and the following is a list of the physicians that belonged to their number:—Arichigenes (Galen., Introd., cap. 9, p. 699, ed. Kühn), Herophilus (Galen., De Simplic. Medicam. Temper. ac Phalen., lib. i., cap. 29, p. 432, and De Different. Pul., lib. iv., cap. 11, p. 751), Aactusinus (Galen., De Digest. Pul., lib. i., cap. 3, p. 787). Magnus (Galen., De Different. Pul., lib. iii., cap. 4, p. 591), and Paulus (ibid., cap. 4, p. 591). To these the name of Athenæus has been added by Le Clerc (Hist. de la Med., p. 508, &c., ed. 1723), Wigan (Prefat. in Arct., Barchusen (Hist. Med., p. 269), Schulze (Compend. Hist. Med., Halae, 1744, p. 322), and Haller (Biblioth. Med. Pract., tom. ii. 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 Arct.), Osterhausen (Dissert. Inaug., Dissert. Pneumatic., and Med. Uranus Historia, Altorf., 1791, 8vo., and Ackermann (De Arcteaeeo, in edit. Kühn). The sect appears to have existed but a short time, namely, from the reign of Vespasian to that of Domitian; its tenets were undefined and absurd leveltry. For further information concerning it the reader may consult Wigan, Ackermann, and especially Osterhausen, loci cit.

PNEUMATICS. This name is given to that part of physics in which are contemplated the mechanical properties of elastic fluids, principally atmospheric air. The word is derived from πνεῦμα, 'breath or spirit,' and pneumatology is a term which was once applied to the division of science now called metaphysics.

The mechanical properties of air appear to have been, to a certain extent, known to the ancients. Aristotle must have been aware of its materiality, and of its tendency to descension, like other elements; he observed that if a bladder be filled with air, it weighs more than when empty: the observation proves at least that he had the idea, but it may be doubted whether or not he ever made the experiment. It is not known how or in what manner he observed 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 the hydraulic press, both of which are ascribed to 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 known to the ancients. But 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 known to the ancients. But 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 known to the ancients. But 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 known to the ancients. But 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 known to the ancients. But 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 known to the ancients. But 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 known to the ancients.
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 correct, it is generally empirically true.

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, and the temperature being nearly constant, and expressed by $14^\circ$ of the centigrade thermometer ($57^\circ$ Fahrenheit), and, as far as it extends, confirms the law above mentioned. The first of the columns expresses the pressure or elasticity in multiples of the weight of an atmospheric column of gas proportional to the second expresses the same by the height, in inches, of the column of mercury supported in a barometer tube; and the third column contains the corresponding volumes.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>30</td>
<td>1'000</td>
<td>400</td>
</tr>
<tr>
<td>5</td>
<td>150</td>
<td>1'998</td>
<td>2995</td>
</tr>
<tr>
<td>11'3</td>
<td>339</td>
<td>0'884</td>
<td>240</td>
</tr>
<tr>
<td>16'5</td>
<td>495</td>
<td>0'661</td>
<td>300</td>
</tr>
<tr>
<td>21'7</td>
<td>651</td>
<td>0'457</td>
<td>1995</td>
</tr>
<tr>
<td>24</td>
<td>720</td>
<td>0'411</td>
<td>1000</td>
</tr>
<tr>
<td>27</td>
<td>810</td>
<td>0'369</td>
<td>900</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 compressing force act perpendicularly on one of its faces; then, if $d$ represent the distance between every two nearest particles of fluid, the number of particles in the surface pressed will vary as $d^2$. Now assume that the repulsive force (perpendicularly to that surface) between every two nearest particles in the volume varies as $d^4$; then the whole repulsive force on that surface, and, consequently, the compressing force, will vary as $d^4$. If $D$ represent the density of the fluid, $d$ will vary as $D^{-1}$. Therefore, substituting $D^{-1}$ for $d$ in the last expression, the whole repulsive force varies as $D^{-4}$. But, agreeably to the law above mentioned, the compressing force varies as $D$; therefore the exponent $-(n-2)$ must be equal to unity, and hence $n = 4$. It follows therefore that the repulsive force between every two nearest particles varies as $d^{-1}$, 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 much beyond the force which would be exerted on those which are next to it.

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 $V'$; also if the densities be $D$ and $D'$ respectively, we shall have

$$P = P' = \frac{V}{V'} = P'V/V.$$ 

and $P = P' = D = D'$. Whence, by equality of ratios,

$$V = \frac{V'}{D'} = D'V.$$ 

Considerable difficulty is found in determining the specific gravities of gases with precision, and different experimenters 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$^\circ$, is 1.22 ounces airduspois, 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 244.7 grains; and it appears that within considerable limits the expansion of the volume of steam 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 $1/7$, and that of steam about $1/30$ of volume, for each degree of Fahrenheit's thermometer. [Air.]

The following table, from the observations of MM. Dulong 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.

<table>
<thead>
<tr>
<th>Temperatures</th>
<th>Volumes.</th>
</tr>
</thead>
<tbody>
<tr>
<td>$25^\circ$</td>
<td>0'8862</td>
</tr>
<tr>
<td>$32^\circ$</td>
<td>0'9090</td>
</tr>
<tr>
<td>$39^\circ$</td>
<td>0'9327</td>
</tr>
<tr>
<td>$46^\circ$</td>
<td>0'9567</td>
</tr>
<tr>
<td>$53^\circ$</td>
<td>0'9804</td>
</tr>
<tr>
<td>$60^\circ$</td>
<td>1'0042</td>
</tr>
</tbody>
</table>

Now to determine the elastic force, or the equivalent pressure, of air in terms of its density and temperature; let $V$ be the volume of a body of air at any given temperature, suppose $55^\circ$ (Fahrenheit), and let $p$ be the corresponding pressure; elastic force, measured by the weight of the column of mercury in the barometer, or by its height, and let $d$ be the number of degrees of temperature above or below $55^\circ$. Then, since $V = \frac{480}{d + 0'0021}$ for the volume of the air at the temperature $55^\circ = d$. Let also $D$ represent the density or specific gravity of the air at the temperature $55^\circ$; then, since the density is inversely proportional to the volume, we have $D = \frac{d}{V}$. But at the temperature $55^\circ = d$ equal to $1.0021$ for air, let $d$ be represented by $D$. Now, if the pressure $p$ be varied and become $P$ without changing the temperature; since then the pressure, or elastic force, is proportional to the density, we have $p = \frac{P}{P'} = \frac{D}{D'}$. Hence, substituting $D = \frac{d}{V}$ and $p = \frac{P}{P'} = \frac{D}{D'}$, we have $\frac{P}{P'} = \frac{D}{D'}$, and $\frac{p}{p'} = \frac{d}{V}$.

And, if $p$, expressed by the weight of a column of mercury whose base is one square inch ($= 1475$ pounds), this value of $P$ is the required pressure upon a square inch of surface of the air.

The density of an elastic fluid being proportional to the force which compresses it, and the volume increasing proportionally to the temperature; it follows that the density of an elastic fluid varies directly as the compressing force and inversely as the temperature.

From experiments it has been concluded that, while steam is in contact with the water from which it is formed, its expansive force increases in a geometrical progression; when its temperature is increased, in an arithmetical progression; but the relation between the elastic force of this gas and its temperature, in that state, is as yet far from being certainly known. Under the word Elasticity is given a table of the elastic forces of steam at temperatures between the freezing and boiling states of water; and the following table, extracted from those which have been formed from the results of the experiments of Mr. Dalton, Dr. Ure, and the members of the French Institute, may also be useful as a means of affording a near estimate of high temperatures. The first column contains the temperature of the water and steam in degrees of Fahrenheit's thermometer; the second is the measure of the expansive force by the number of inches in the height of the column of mercury which on a given superficies would counterbalance it; and the third, the like measure expressed by multiples of the weight of the atmospheric column when the air is in its ordinary state.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>212</td>
<td>30</td>
<td>1'18</td>
<td>212</td>
</tr>
<tr>
<td>220</td>
<td>35'54</td>
<td>1'18</td>
<td>220</td>
</tr>
<tr>
<td>240</td>
<td>51'7</td>
<td>1'72</td>
<td>240</td>
</tr>
<tr>
<td>246</td>
<td>72'3</td>
<td>1'72</td>
<td>246</td>
</tr>
<tr>
<td>260</td>
<td>101'9</td>
<td>3'06</td>
<td>260</td>
</tr>
<tr>
<td>280</td>
<td>139'7</td>
<td>4'66</td>
<td>280</td>
</tr>
<tr>
<td>312</td>
<td>165'5</td>
<td>5'52</td>
<td>312</td>
</tr>
<tr>
<td>340</td>
<td>231'7</td>
<td>8'72</td>
<td>340</td>
</tr>
<tr>
<td>357</td>
<td>296'79</td>
<td>9'893</td>
<td>357</td>
</tr>
<tr>
<td>380</td>
<td>335'9</td>
<td>14'53</td>
<td>380</td>
</tr>
<tr>
<td>408</td>
<td>341'5</td>
<td>18'05</td>
<td>408</td>
</tr>
<tr>
<td>419</td>
<td>619'3</td>
<td>20'44</td>
<td>419</td>
</tr>
<tr>
<td>442</td>
<td>719'6</td>
<td>23'94</td>
<td>442</td>
</tr>
</tbody>
</table>

When steam is not in contact with the water from whence it is formed, and when it is subject to a constant pressure under which it may expand in every direction (as when it is formed in the atmosphere), an increase of temperature will not produce an increase of density, but merely of its elastic power. Now, if we suppose steam to expand —
or '00218 of its volume for an increment of temperature expressed by one degree (Fahrenheit); and it be 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 $1\cdot462 V = 1711$; whence $V = 1170.3$; and, if $c$ represent the given temperature in degrees Fahrenheit's thermometer, $(1 + '00218 c)$, $V$, or $1170.3 + '255.4$, will express the volume of the steam at the temperature $c$, 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 counter-balancing mercurial column), we have

$$1711 : 1170.3 + '255.4 : : 30 : '020 '04476$$

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 prevented from expanding, we have the following proportion:

$$\text{As any given compressing force (represented by the height of the mercurial column corresponding to some temperature $t$ in the above table), is to the elastic force or pressure (} = E\text{) due to that temperature, so is the volume of the steam = 1711; so are 1711 cubic feet (} = \text{the volume of steam produced by a cubic foot of water at 212\text{ under a constant pressure equal to the atmosphere), to the volume in cubic feet of the steam produced by a cubic foot of water under the given compressing force. Let this be represented by } \nu\text{.}}$$

Now the quantities of matter being the same, the specific gravity of the water and of the steam are inversely proportional to the volumes; and the specific gravity, or weight of a cubic foot of steam being known from experiment to be 2547 grains, when the cubic foot of water produces 1711 cubic feet of steam, we have

$$\nu = \frac{1711}{2547} = 0.672$$

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 atmosphere in its ordinary state. It must consequently exert a pressure against a cannon-ball, and the interior of the chamber of the gun, equal to nearly 15,000 pounds upon every square inch of the surface upon which it acts. Both D. Bernoulli 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 gravitation; and it is shown by Pousson (Traité 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 elastic cold in the upper regions, so that its expansion is destroyed by the pressure of the ethereal 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, and that the height above about 45 miles above the earth is probable that 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 thickness, which latter represent by $AB$, $BC$, $CD$, &c.; and, as these thicknesses are small, let 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.: $d_1 + d_2 + d_3 + d_4 + &c.$.

In like manner $d_1 + d_2 + d_3 + d_4 + &c.$ is the weight of the $AB$ column; and $d_1 + d_2 + d_3 + d_4 + &c.$ is the weight of the $AC$ column; and $d_1 + d_2 + d_3 + d_4 + &c.$ is the weight of the $AD$ column.

Then, from (I) and (III), by equality of ratios, we have

$$d_1 = d_1 + d_2 + d_3 + &c.$$  (I)

And from (I) and (IV), by equality of ratios, we have

$$d_1 + d_2 + &c. = d_1$$  (IV)

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 $KH$, $KG$, $KF$, &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 $AC = \log_{\text{dens. at } A} - \log_{\text{dens. at } C}$. But such a table is unnecessary, since, from the species 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 abscissa (represented by $x$) on the vertical line $ZA$; and that the earth, with the heights of 45 miles above, is supposed to be a sphere of about 45 miles radius. It is probable that 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 thickness, which latter represent by $AB$, $BC$, $CD$, &c.; and, as these thicknesses are small, let 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.: $d_1 + d_2 + d_3 + d_4 + &c.$.

In like manner $d_1 + d_2 + d_3 + d_4 + &c.$ is the weight of the $AB$ column; and $d_1 + d_2 + d_3 + d_4 + &c.$ is the weight of the $AC$ column; and $d_1 + d_2 + d_3 + d_4 + &c.$ is the weight of the $AD$ column.

Then, from (I) and (III), by equality of ratios, we have

$$d_1 = d_1 + d_2 + d_3 + &c.$$  (I)

And from (I) and (IV), by equality of ratios, we have

$$d_1 + d_2 + &c. = d_1$$  (IV)

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 $KH$, $KG$, $KF$, &c. may be considered as representing the logarithms of the densities in the strata $KH$, $HG$, $GF$, &c. respectively.
or $y = a^x$ [LOGARITHMIC CURVE], where $a$ is some constant which is called the base of the system of logarithms appertaining to the particular curve.

It has been demonstrated by mathematicians, that if tangents $am, dn, \text{etc. be drawn from any points in the curve, the subtangents at } A m, D n, \text{&c. will be equal to one another; and that the area comprehended between the finite curve, its asymptote $AZ$, and the ordinate $A q$, is equal to the product of the constant sub- tangent, or modulus of the curve, and that ordinate: hence the area between $A A$ and the infinitely remote summit $Z$ is equal.]

Also, by the nature of logarithms, the logarithms of the same natural number in different systems of logarithms bear to one another the same proportion as the moduli of those systems. We have therefore only to find the value of the sub-tangent $A m$, or modulus, for what may be called the atmospheric logarithms; and, from the last-mentioned property, the upper value of $AC$ may be transformed into an expression containing common logarithms.

Let $A$ denote the height of a homogeneous atmosphere whose density is equal to that of the real atmosphere at the surface of the earth, which density is represented by the line $A a$ in the above diagram; then $A A a$ will represent the weight of such homogeneous atmosphere, or its pressure on the point $A$. But the area between $Z A A a$, and the curve being supposed to be made up of the infinite number of ordinates $A a, D d, F f, \text{&c., which, severally, represent the densities of the air at the points $A, D, F, \text{&c. in the in- finite column} A Z$, of atmospheric air; that is to say, $A A A a$, may represent the weight of such column, or the pressure of the real atmosphere on the point $A$; this being made equal to the former pressure, it is evident that we shall have $A A = A$. Thus the height of homogeneous atmosphere exercising at $A$ the same pressure as the real atmosphere, will be the sub-tangent, or modulus, of the atmospheric logarithms. The value of $A$ is determined by a proportion in which the height of the column, of homogeneous air, and the column of mercury which holds it in elevi- librio, are to one another inversely as the specific gravities of the two fluids. [HYDROSTATICS]. Now the specific gravity of air and mercury being, respectively, 1/22 and 13658; and the height of the column of mercury in the barometer being 30 inches when the temperature is expressed by 55° (Fahrenheit), we get 27603 feet, or 4634 fathoms for the value of $A$. Then the modulus of the common logarithms being 0.43429, we have

$$\text{density at } A \text{ log. density at } C$$

and this last term is the equivalent of the upper expression for $AC$.

The height of the column of mercury which is supported by the pressure of the atmosphere directly with that pressure; it follows that we may substitute in the last expression the heights of the mercurial columns at $A$ and $C$ for the densities of the air at those points. and thus we have 10670. com. log. height of merc. at $A$ $= \frac{435}{435} = 245$ nearly, the variation, in fathoms, for one degree; consequently 245 = 670 (= the excess of 10670 above 10000) : $1' = 27$ nearly; and therefore $55' - 27'$, or $28'$, is the temperature at which the height of merc. at $A$ expression 10000 com. log. height of merc. at $C$ gives the height of $C$ above $A$ in fathoms; and of course this value must be increased or diminished by the part of itself for each degree above or below 28° in the mean of the temperatures observed at $A$ and $C$. [HEIGHTS, MEASUREMENT OF].

The mountain-barometer, as it is called, is usually pro- vided with an adjusting screw, by which the surface of the mercury in the eistern 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 a screw of this description, and then the correction must be made for the error of the scale. For this purpose, the ratio be- tween the area of the bore of the tube and the interior area of the eistern must be found (it is usually given by the maker of the instrument); let $e$ be this ratio between the rise or fall of the mercury in the eistern and the corresponding fall or rise of that in the tube.

When the surface of the mercury in the eistern happens to coincide with the zero of the scale of inches, the height of the column in the tube is correctly expressed by the scale, and the top of the column is, in that case, called the neutral point, no correction being then necessary. In other cases add $e$ of the height shown by the scale to that height, if the latter is greater than the neutral height, or subtract if less; the sum, or difference, is the correct height of the mercury in the tube above the surface of that in the eistern.

Water boils when the elastic power of the vapour formed from it is equal to the incumbent pressure; and conse- quently the temperature at which the boiling takes place in the open air will depend upon the weight of the atmo- spheric air and that of the vapour above it. The boiling point comes as 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 con- structed an instrument called a thermometrical barometer, by which, on the principle just mentioned, the relative 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 means of a spirit-lamp.

In order to determine the heights of stations merely by the knowledge of the temperature at which water boils, the formula $F = \left( \frac{I + 75}{85} \right)$ given by Mr. Tredgold, might be employed. Here $I$ is the temperature of the boiling water at the station, expressed in degrees of the centigrade ther- mometer; $F$ is the measure of the elastic force of the steam at the temperature $F$ under the pressure of the atmosphere, and is expressed by the corresponding height, in centimètres, of the column of mercury in a barometer. This height being thus determined at each of the two stations, $A$ and $C$, the difference of the logarithms of the heights being multiplied by 10,000 will give the approximate height AC, which may be then corrected as above.

The air which air flows through 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 increased, the relative air which comes to the orifice, yet the pressure by which the air is forced out varying in the same proportion, the velocity, 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 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 that it would have had it been free, if the whole column of atmosphere above the orifice, is, with the velocity due to the descent of a body from a height equal to that of a homogeneous atmosphere. After this density of the air in the vessel diminishing, its elasticity diminishes with it, the amount of motion is diminished 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
crease the velocity of the efflux. But the law just men-
tioned 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-act against the effluent air at the orifice, thus diminu-
ting 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 is at 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 height of the column of atmospheric
atmosphere), and \( D' \) and \( D \) the density at the earth's surface; \( D' \) is
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 differ-
ence between that with which the ordinary air is driven
through the orifice and that with which the rarer 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
[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 as for
air. Thus, knowing the temperature of steam, and conse-
quently the equivalent portion of water, we can 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 by the falling down of 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 homoge-
neous 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 ex-
hausted vessel before the air in the latter acquires a 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 \( V.D't \) repres-
sents the small quantity of air which may enter the vessel
\( V \) in the time \( dt \) at the commencement of the efflux. Now,
let \( D \) be the ordinary density of the air, \( h \) the height of the
homogeneous atmosphere, then \( \sqrt{\frac{2gh}{[HYDRODYNAMICS]}} \)
will be the initial velocity. But, \( P \) being the force by which
the ordinary air is impelled through the orifice, from the
above equation \( P.D' = PD \) we have \( P' = \frac{PD}{D'} \), and \( P - \frac{PD}{D'} \)
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 \( \sqrt{\frac{2gh}{D}} \left(1 - \frac{D'}{D}\right) \); this being multiplied by the
density, by the area of the orifice, and by \( dt \), gives
\( A \sqrt{\frac{2ghD(D-D')}{D}} dt \) for the small quantity of air which,
during the element \( dt \) of 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 one
another; hence, equating this expression with \( VdD' \), above,
we get
\[
dt = \frac{A \sqrt{2ghD}}{V} \left(1 - \frac{D'}{D}\right). \]
This equation being integrated gives
\[
t = \frac{A \sqrt{2ghD}}{2V} \left(D - D'\right)^{3/2} + \text{const}. \]
The constant is determined by considering that \( t = 0 \) when
\( D' = 0 \), which gives const. \( = \sqrt{D} \), 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 geo-
métrical progressive ratio from that of the surrounding
plasm. Now the common ratio of this progression may be expressed
algebraically by the term \( \frac{v}{v+p} \), where \( v \) is the volume of
the receiver, and \( v \) that of the barrel; and, if \( D \) be the

P. C. No 1140.

The density of the air in the receiver after \( n \) strokes.
Hence this density after \( n+1 \) 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 any given density.

For the pressure and resistance of the air against bodies, see
AIR-DYNAMICS and GUNNERY; and for aerial naviga-
tion, see BALLOON.

PNEUMOBRAHMIATA. Lamark's second section of his
guide, Cestropoda, containing the Limacina, or Smalls.

PNEUMONOIA. [LUNGS, DISEASES OF.]

PNEUSTOIDEA, Fitzinger's name for a family of
Saurians, formed from Lyriocephalus and Pneusta, Mer-
mum, and Phryncephalus, Kaup. This family Fitzinger
approximates to that of the Cameleons.

P.O., BASIN OF THE. The river Po, called Padus and
Eridanus 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 pyramid 12,569 feet high, 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 Pignor and of
the Valdenses; and on its right bank the Vaira, the
Maira, and the Grana, which, rising in the recesses of the
Maritime Alps, along the north-eastern part of the open
country of Saluzzo, and join the Po in succession above
the town of Carignano, from whence the river flows
nearly due north to Turin, through a broad valley bounded
by the effects of the Corinian Alps on the left 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 among the Alps in northern Italy.
This 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 con-
tinues to flow for the rest of its course to the sea, making
however numerous windings. Below Chivasso the Po
receives from the north the Dora Baltea, with all the drainage
of the large valley of Asta, and about thirty miles farther
from Po, the Sesia, a considerable stream, from the
mouths of Mount Rossa, and which, after draining the Val di
Sesia, an Alpine valley, enters the plains of Verceli, receives the
Cervo and other streams, and after a course of about ninety
miles enters the Po below the town of Casale. The Po
there makes a bend to the south, where its course 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ank, 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, receives the Ellero, Pesio, and
Gesso, and the Stura from Coneo (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
rivers of Lower Monferrato and on one side those of the
Ligurian Apennines on the other. [MONFERRATO.] The
Tanaro flows by Asti, the principal town of Montferrato, receives the Belbo from the south, and farther on the Borinella, swelled by the Orbia from the mountains of Montferrato, of
which it flows through the plains of Alessandria and Ma-
rego, and enters the Po about eight miles below
Valenza, after a tortuous course of about 150 miles, in which it
describes a curve 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,
the Po, revolving on its right bank, passes over the
Southeastern tableland of Sarsina from Tortona and the Su-
ffo from Voghera, and on its left or northern bank the
Agogna and the Tendroppi from Novara. Between Voghera and Placentia several effects of the

Vol. XVIII.—2 Q
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 in the torrent affluents of 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 less liable to the rains which fall in the Apennines. [Napoleon remarks, 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 Sestò, from whence it flows 30 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 flows the Lambro, swelled by the Olona, the river 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 Milanese. East of the Ticino flows 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 below the outlet of the little lake of Idro enters the Po above Borgofero. The Oglio is navigable by large boats below Pontevico. Its whole course, from its source to its confluence, is about 140 miles. [BASSA, PROVINCE OF.] Proceeding to the eastward, the next great affluent of the Po is the Minio, 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 Minio, and a little lake at Peschiera forms the largest 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 Nura, a small stream; 2, the Taro, a larger river which rises in the mountains of Pontremoli, and after a course of about 63 miles enters the Po above Casal Maggiore. East of the Taro flows the Lake of Lariana, two miles long, in the plain of Parma; 4, the Crostolo, a small 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 little town of Castelnuovo. The Minio, and the large boats up to Pontebbano near Modena [MODENA, DUCHY OF]; 6, the Piaceno, called Scolleneta in the upper part of this course, which rises at the foot of Mount Cimone near the frontiers of Tuscany, crosses the duchy of Modena and part of the papal province of Ferrara, and after a tortuous course of nearly 100 miles enters the Po below Bovolone. The Piaceno is navigable for 30 miles above its confluence with the Po. The Piaceno is the last affluent of the Po from the south; but on the north lies the fork of the Minio, various canals, under the names of Canal Bianco, Pollesella, Taranto, Adigeito, &c., bring into the Po part of the waters of the Adige, and the drainage of the marshy country which lies between the two rivers. [ADRIA.] The Po receives the navigable affluents of the Navesi, but after the dreadful flood of 1152 the main stream changed its bed, and it now passes about three miles north of Ferrara. About twenty miles lower down, near Papazzo, the river divides into two branches; the left is the largest, and is called the Marecchia, or Po Grande, and also Po delle Forlai; it enters the sea by several mouths, the principal of which, called Maestra, is always navigable by merchant vessels. The course of the Adda from its mouth to the mouth is about twenty miles. The right or southern branch, called Po d'Ariano, also divides into several mouths, the principal of which is called Po di Goro, and is likewise accessible to merchant vessels from the sea. The tide rises over 6 feet, and is 50 to 60 miles wide, the larger part of which lies on the northern side of the course of the river, and between it and the lowest offsets of the Alps. South of the river the hills of Monferrato and the Ligurian Apennines and those of Piacenza are the sites of several important harbours, leaving only a small extent of plain between; but farther east, in the country of Modena, Bologna, and Ferrara, the
Apeninnes 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 country is known by its name of Poinean or of Poineans; the 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, for 600 feet above the sea; 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 Poinean district is unequalled.

The remainder of the basin of the Po consists of the hilly region and the highlands. The hilly 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 Oros, Maggiore, Lugano, Como, Iseo, and Garda. South of the Po are the hills of Monferrato and the lower offsets of the Ligurian Apeninnes. The highlands are formed by the Alps on one side, and the Apeninnes on the other. [ALPS; APENNINES.]

POA, the Greek name (φοιά) for grass of any kind, is applied by botanists in a more limited sense, being restricted to those plants of the Graminaceae order which have a p nasty surface, and consist of that part of the stems, hermaphrodite flowers, normal pairs of glumes, and palea membranous at the 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 Poa annua, the little green star of the Hebrew psalms, which at the absence of the gardener, flowering and ripening its seed at all seasons when not actually frosted. 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 Poa pratensis and praelensis, two meadow species, are the most valuable.

POACHING. [GAME LAWS.]

POGILLOPORA. [MADREPORA.]  
POCKLINGTON. [YORKSHIRE.]

POCOCO, 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 St. Paul's, and in 1620 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, 1626, his Lord friends having been bidden, he volunteered to apply himself to the study of the Oriental languages, in which he made extraordinary progress, first under the tuition of Matthew Paris, and afterwards under that of the Rev. William Bedwell, vicar of Tottonham, 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 or- diated priest, and soon after appointed chaplain to the English king at the court of Spain; at this time he continued five or six years, making further progress in the Hebrew, Syriac, and Ethiopean tongues, 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 professor of the Arabic lec- ture 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. In 1638 he published his first volume of that literary undertaking by the loan of several valuable MSS. in his own collection. In 1638 his Latin translation of the 'Annals' of Eutychius was published at Oxford, in 2 vols. 4to., and at a very early age he had rendered more than one course of lectures upon this occasion; for soon after, at the express desire of his patron Laud, he undertook a second voyage to the East, along with John Gresaves [Gresaves], and remained some time at Constanti- nople collecting antique 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 Sionita, a Morante well versed in the knowledge of Arabic. Sionita, as his task, and the Arabic version was afterwards printed at Oxford, in 1650. [GROTIUS.] While at Paris, Pocock heard of the commotions in England, and on his arrival he found his paternal benefactor, the Lord Chancellor, a prisoner in the Tower. [LAUD.] He now resumed his lectures and 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 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 Arabian professorship were seized by the parish, and he was reduced to his country living. In 1646 Pocock married the daughter of 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 lectureship at Oxford, and on the death of the Lord Chancellor, then a prisoner in the Isle of Wight, added a curacy in Christ Church, which was confirmed by parliament; but the curacy thus assigned to him being different from that originally annexed to the professorship, Pocock entered a protest against it, and refused to receive the profits. In the mean time he composed his 'Specimen Historiarum,' being extracts from the work of Abu-l-faraj, in the original Arabic, translated into Latin, and published in 1649. [ABULFARAJIUS.] This work, which was printed at Oxford, in 1648 and 1656, 4to., was reprinted in 1806, by White, with some additions by Sylvestre de Sacy. In November, 1646, about a year after publishing the preceding work, Pocock was ejected from his curancy, and it was intended to deprive him of the Hebrew and Arabic professorships; but upon a petition from the heads of the houses, the masters, and scholars at Oxford, Pocock was suffered to enjoy both, and in 1653 had a certifcate of being 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 O- xford colleagues were willing to represent the disgrace which followed the rejection, upon such grounds, of so eminent a scholar as Pocock, that the measure was abandoned. Soon after Pocock published his 'Porta Mosis,' being six preatory discourses of Moses Maimonides' 'Commentary upon the Mihaia,' 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 MAINMONIDES), together with a Latin translation and numerous notes. In the following year Pocock appears to have entertained the idea of publishing the 'Exposition of Rabbi Tanchum on the Old Testament,' as he was informed that any one 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 at Oxford, and he had a considerable hand. He collated the Arabic Pentateuch, and wrote notes on the several versions concerning the different Arabic versions 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. In 1658 Pocock published his History 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.; and at an earlier date he had a pamphlet which died before it appeared. At the Restoration Pocock was restored (June, 1660) to his curancy 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 Gensericus Varro's "Hebraico," published in 1661, was the Arabic poem by Abû Isma'îl Tughrail, entitled 'Lâmiyatu-l-'ajem,' 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 Pocock's works was his "Commentary on the Prophets of Michael the Malachi," first published in 1712, and in 1721, in 2 vols. 4to. After the publication of this work he seems to have withdrawn himself to biblical learning. In 1674 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 Michæl the Malachi." He died and was buried in 1731, in Joel, which he intended 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 1671, under his direction, the philosophical treatise of Ibn Tofayl, with a Latin translation and notes, under this title—The Philosophus Autodidactus, sive Epistola Abu Jaafar Ebne Tophail do Hai Ebn Yukhelam, the same which Ockley afterwards translated into English. [Ockley.] He also translated into Latin the work of Abu-es-Hasan Al-Basri on Egypt, but published only until the beginning of the present century, when White published it with the original text, Oxford, 1800, 4to. [Abdallatif.] Another of Pocock's sons, named Thomas, translated into English the work entitled "Description of the East and of some other Countries," of which the first volume was translated into English by 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 'Archeologia.' Among the MSS. in the British Museum (4811, 4927) are several volumes of the gift of Bishop Pocock, containing the minutes and registers of the Philosophical Society of Dublin, from 1863 to 1767. A French translation of his travels appeared at Paris, in 1771, in seven volumes, in 12mo.

PODACRIS, 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 Acanthodactylus of Fitzinger, and part under the genus Eremias of the same author.

PODARGUS. (Zoology.) [Night-Jars, vol. xvi, p. 225.]
of Germany. The race of horses is much esteemed. The sheep are of a good breed, and their wool is tolerably fine. Swine are very numerous. The farmers breed and raise great 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, gravel, and sand. The forests are of very little importance, and not sufficient even for the supply of the inhabitants.

There is hardly any wholesale trade in the province. What the farmer has to spare, such as corn, flour, potatoes, oxen, horses, tallow, wax, honey, &e., he sells to the Jews, who take the corn to Olesa, the oxen to Brody and Germany, and carry on a profitable contraband trade with Austria and Moldavia. Almost all the brandy distilleries, which are considered a very profitable occupation, are in the hands of Jews.

The schools are few in number, and Schmidtmann 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 variously stated, but it is probable that it amounts to at least 1,500,000.

The principal town is Kamianiec, the capital of the province on the river Smotria, 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 the modern city, and of a vast 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 7,000 inhabitants, a silk manufactury, and some trade.

(Hassel; Cannabich; Schubert; Schmidtmann.)

PODOPHTHALMA, PODOPHTHALMANS. Dr. Leach, in his Brachyura, makes the Podophthalmans, the Decapoda, and the Brachyura and Macura (Brachyura and Macura) families. M. Desmarest thus defines the Podophthalmans:—

Composite eyes placed at the end of a moveable peduncle; no simple eyes; mandibles provided with a palp; jaw-feet always having a palp adhering to their base.

M. Milne Edwards observes that the Podophthalmans include the first of the sub-class of the Maculate Decapodous, and observes that the Crustacea of which this grand division is composed present such multiplied analogies to each other, that they might be placed in one large family, or even in one genus. This division, continued by M. Milne Edwards, corresponds very nearly to Lamarr's order of Crustacea Pediculim, and to Dr. Leach's Maculacra Podophthalmans; but, in the opinion of M. Milne Edwards, it repoes on different bases, and can only 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 Podophthalmans 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 cuticle. In the Decapoda it is the branchiopod. The respiratory sound in this group is the true organ of the branchiopod. It is a respiratory organ, and is coiled in a spiral form, and is the organ by which the water is forced out of the body. The branchiopod is the organ by which the water is forced out of the body. The branchiopod is the organ by which the water is forced out of the body. The branchiopod is the organ by which the water is forced out of the body.

Another character, which is not wanting in any Podophthalmian, 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 mobile stalks to which are found the eyes. But these are not the only crustaceans which have pul- culated and moveable eyes; the Nebaliinae, which undoubtedly belong to another group, are equally provided with them.

The buccal apparatus of the Podophthalmians 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, and it may be said that the fourth pair of jaws are limited 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 Echigophthalmians. 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 Squilla, 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 vertiform, and constitutes a single coxa, which is elongated, or else a palp, but hardly ever presenting at the same time two kinds of appendages. This mode of conformation of the respiratory vessels not only separates the Podophthalmians from all the crustaceans whose thoracic feet are lamellar, as the Nebaliinae, 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 bucker which occupies the dorsal surface of the body, and extends more or less far forward. This is not a carapace, but a cylindrical case.

If the whole of their organization 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 Podophthalmans ought to be thus characterized:—

Mouth armed with mandibles and jaws proper for mastication; in general, the carapace not coiled; the carapace not unguiculated and moveable; thoracic feet vertiform; a carapace.

According to the system of M. Milne Edwards, the Podophthalmans form the order of the Decapoda, and the Cerastrea. This division, he observes, is generally adopted, but the greater number of authors establish it on the number of thoracic members which constitute the locomotive apparatus; whilst, according 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. [POUTRINDE.

PODOPHTHA'LUS. [PODOPHI'TIS, Wegmann’s name for a genus of Stenocri- dean Decapods, belonging to a subdivision which have not the auditory apertures visible.

PODOMY'LLAE. A small group of polytropous Exog- ens, by some regards as a distinct natural order, and by others referred to the Decapodous or Echinodermata. They are not Papaveraeous plants if they had consolidated carpels; but possessing no more than one carpel, they appear more referrible to Ranunculaeaceae, from which, in fact, they seem only to differ in having a solitary carpel; and however also occurs in that order, although not characteristic of it. The only species referred to Podophyllæa are the Augerova and Podophyllum, two North American plants, with succulent arid root-stocks, deeply lobed leaves, and white flowers hidden among them. They have three or four sepals, twice as many petals, indefinite hypogynous stamens with linear or oval anthers, a thick sinuous stigma, and the ovules arranged along the central suture of the solitary car- pellus. Podophyllus, an annual of May and June, is not uncommon in gardens, whither it has been introduced from the United States, where it is employed as a safe and active cathartic.
1st Subdivision or Race.

Twelve feet; the six anterior terminated by hooks or unguiculated. 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., Risso), and Dichelostomum of Hermann the younger and authors.

2nd Subdivision or Race.

Fourteen feet; the six anterior unguiculated; the fourth or fifth pair bifid; the sixth and seventh having the haunches and the thighs very much dilated and united by pairs.

Gecrops, Leach, is the only genus placed by M. Desmarest under this subdivision.

3rd Subdivision or Race.

Fourteen feet; the six anterior unguiculated; all the others bifid.

The genera arranged under this subdivision are Pancrea, Leach (Caligus, Latr. and Lam.), Nympha, Leach.

4th Subdivision or Race.

Fourteen feet; the six anterior unguiculated; the fifth pair bifid, with the last joints ciliate with hairs.

Caligus, Muller [Caligus], and Tatedus, 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 antennae; shell in the form of a buckler, consisting of two pieces, and arranged by a long sword-shaped tail: organs of respiration placed under the second piece of the shell.

Family Limulidae, Leach.

The genus Limulus (Limulus, Mull, Fabr., Lat., Leach; Monodon, Linnaeus; Xiphosura and Xiphosurus, Gmelin; Polypus, Lam., Caner, Clus.) is the only one belonging to this division. [Xiphosurians.]

See further Suctorial Crustaceans.

POELEMBURG, CORNELIUS, was born at Utrech, in 1814, 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 to be found in his dressing his landscapes with the ruins of ancient buildings, and he was not less distinguished 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.

Upon his return he was visited by Rubens, who expressed great pleasure in examining his works, of which he purchased several for his own collection, and bestowed others, by which he directed attention to the merit of Poelemburg, and advanced both his fortune and his reputation.

Poelemburg was invited by Charles I. to London, where he painted many fine pictures, for which he received large sums. The king wished him to stay in England; but his affection for his own country induced him to return to Utrecht, where he acquired a large fortune and was universally esteemed. Many eminent artists, especially Steenwyck and Kierigs, got to paint the figures in their works. The genuine pictures of Poelemburg are extremely scarce, but his disciples often imitated his 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.
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 ones with a medallion. These are the two Disciples on the
way to Emmaus (the usual delicacy of execution is here united with uncommon force); at Lu-
ton-house, a Repose in Egypt, of most delicately pure ex-
ecution and soft warm 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, but the unity of the heart, the feeling and language, which belong to good poetry, a pro-
se composition, in which these characteristics are visible, is
often termed 'poetical' or 'poetry,' just as a bad poem is
called 'prose.' 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 Whatley's Rhetoric, page 278.)

The art of poetry is an imitative art. Its object, in com-
mon 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, sculptur-
by form, and poetry by language. In no case however is it the proper province of art to pro-
duce 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 ana-
yzed above that which passes. The poet seeks to make the
impression permanent in the mind of the reader.

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 dream 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 vindicate the mimetic character of special sounds,
such as hail or thunder, in music.

Poetry 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 imi-
tation on the other hand prevents the true life by the fence of metrical form, and thus it is that
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 dif-
ferent kind, aim at imitating the effect of those forms, that
is to say, 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 subserve a succession of images and
sentiments 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
enables words for the purpose, it is the only art which
can enunciate a proposition and command this element of
the moral sublime.

Poetry, σωματις or 'making,' seems to be so called be-
cause good poetry creates or re-embodies the impressions
which the poet has imbued into his own mind by obser-
vation. This faculty of producing from such elements the
impression of individual character, action, or scenery, is the
power which we generally term imagination, and without
which the art necessarily fail. Wordsworth (Preface to 'Lyric Ballads') says, 'Poetry is the spo-
taneous overflow of powerful feelings; it takes its origin
from emotion recolected in tranquility. The emotion is
contagious, it infects the species of refection; it gradually
disappears, and an emotion kindled to that which was
before the subject of contemplation is gradually pro-
duced, and does itself actually exist in the mind.' This we
take to be a description of the mode in which imagination
works. The poet, by close and habitual observation, stores
his mind with the circumstances which have given rise to
or attended the production of emotion in himself. The
result of this observation he works up so as to create in
the reader's mind some emotion similar to that which he has
experienced; kindred, but not identical, for, as Wordsworth
true remarks, the excitement must co-exist with an over-
balance of pleasure. Now many of the emotions which the
poet excites are, when called forth by real events, peculiarly
painful. It is his business so to combine them with pleasing
associations, so to soften their disgusting features and ren-
der prominent their more attractive ones, and above all so
to make that, taking into the consciousness of their existing in a work of art, and not real events,
they become a source of exquisite delight. Such a work is
reality seen through the medium of the poet's mind, and
clad by him in a bodily form so as to retain its vividness,
but lose its deceptiveness.

It has been often observed that the language of savages
is highly metaphorical and what is commonly called
poetical; that nations in their earlier stage show a peculiar
fondness and aptitude for poetry. The truth is that there
exists in the mind of man a natural craving for indi-
viduality. We gain knowledge by generalizing from in-
dividual objects, and we are always eager to re-embody
in abstractions the images of the world. In our most civilised state, there is a
perpetual tendency in the masses to a "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
the modern habit of thought. Wordsworth himself says that
"realism" means 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
eyes and a sword. Thus the appeal towards the imitative
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 vividenly before the mind by the de-
scription of the poet. Abstract terms are indistinct, and
their obscure metaphysical associations in five-syllable
verses 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.
Thurwall says, to embody the spiritual and personify the
indefinite, they excelled no less in the dry and abstract
studies of philosophy. If Homer, if Aschylus and So-
plocles, have never been rivalled in poetry, it was Aristotle
of Athens who agreed with the homely saying which is a
process 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
the poem. Words are the instruments of the poet; they are
the tools with which he works. We think that Mr. Words-
worth 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
formule 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 art, so language too, both by its na-
language, by its appropriateness and by its dissimilitude to the
phrasology of common life, supply another twofold source
of pleasure. There are ballads, and even larger composi-
tions, in which the simple and homely diction suits the
purpose of the subject and adds to the power and the
force of expression. But who will say that in such a work as the
'Agamemnon' of Aschylus, where the whole drama is knit
together by one pervading feeling of mysterious dignity,
the language should not bear a proportion to the other quan-
tities of the work?

'Let gorgeous tragedy
In accepts call upon me wearing by
A State and 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 by a poet,
and according to which we call a poem epic, dramatic,
lyric, &c. There is great difficulty in this part of our sub
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. Lucius and Virgil were, respectively, the poets of the Latin epic. The masterpiece of the Latin epic was to be the military epic and as dramatic epic into Latin, were both probably Italian Greeks. Ennius too, the real founder of the Roman epic, was born at Rhodium in Calabria. It is probable that he was a Greek, and that he received his education in the Ionian measure. No remains of Latin epic poetry between Ennius and Virgil have been preserved. In the latter author we find the reflection of Greek poetry on the polished surface of the age of Augustus. Though exquisitely beautiful, the 'Aeneid' is something almost entirely different in tone and spirit from Homer, and bears traces of its exotic origin, just as the Spanish poetry, after the time of Garciaseo de Vega, savours of Italian influence. The principal Latin poet is Virgil, the further development of whose genius in the 'Iliads' of Lucan, the 'Argonautica' of Valerius Flaccus, the 'Punicas' 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 field of accomplishment. The middle ages were full of exploits 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 their utter destruction the exaggeration of their race. What they had lost in reality they made up for in fiction, and communicated the interest in their own hero to the invaders who encroached on their borders.

The oldest of the 'Cycles' is the 'Nibelungenlied.' It is composed of rhyning 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 scene is laid in a Christian time and country, is, as Goethe has observed, purely heathen. There is no trace of any moral influence of religion. The 'Nibelungenlied,' in its present form, was probably composed in the time of the Hohenstaufens, about 1200 a. d. The 'Nibelungenlied.'

The poem of the 'Od' 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 Sanscrit are the 'Mahabharata' and the 'Rama,' but the most curious example is the 'Dharmasastra' or 'Nathm' of Firdusi (who lived about 960-1030 a.d.), in 60,000 verses. The 'Moaalakat,' or collection of seven poems anterior to the time of Mohammed, of which 'Antar' is one, is said to have been composed of the 'Mara Cashkarris' of the age. With the exception of our own Milton and of Camoens, the most celebrated modern epics are those of the Italian poets. The union of the classic and romantic elements in modern poetry began in Parnell, the friend of Lorenzo de Medici (died 1487). To him succeeded Boccaccio and Ariosto. The groundwork of their fictions was the cycle of Charlemagne as developed in the yet popular story-book the 'Reol of France.' The earnestness and exaggeration of Parnell 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 antithesis 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 time of Spenser, Milton, and other writers, is beyond question.

In later times, in Germany, Klopstock followed in the footsteps of Milton. It is scarcely necessary to mention the 'Henriade.' Scott's poems have a strongly marked epic spirit. In Byron the morbid feeling of the individual is too much visible through the thin veil of the story, 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 spread from the religious ceremonies connected with the worship
of Baccillus; tragedy and comedy began respectively with the
performers in the Dithyrambic and Phalle 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. The "Autos Sacramentales" of Calderon, written at the end of the seventeenth century, at the court
of the Spanish Bourbons, were genuine devotional cere-
monies. The Ars Maria and the prayer on the stage were
motherly, and the soul in the body was human, but
introduced was professedly a fiction. It is rather difficult to
ascertain what Aristotle meant when he said that "tragedy
effected the purification (atoneuia) of the passions by means of
fear and pity." To confine the message in the eighth
book of the "Poetics," in which he uses the same expressions
with reference to music, it will be clear that he did not
mean, as has been supposed by some, the exercise of our
passion on proper objects. We believe that he intended to
describe that co-existence of excitement with an overbalance
of pleasure to which we have already alluded. Fear and
pity, when excited by the reality, do to a certain degree
degrade or destroy the equilibrium of the mind: when pro-
perly appealed to by music or poetry, they cease to stagne,
and are at the same time "purified" of all noxious and pain-
ful action; they are exercised consistently with the supremacy
of reason and the enjoyment of pleasure by the individual
human being.

The question of the unities in the drama is closely con-
ected with that of illusion referred to above in its relation
to art in general. There can be no doubt but that unity of
action is essential, but that Aristotle rigidly prescribes the
universe, the time, and the place, are not quite so certain.
What is true. To turn a representation of three hours into a
whole day is a contradiction of reality differing only in
degree from imagining the same space to represent a lapse of
years; and even then the traditional rule is not to be
allowed to stand in the way of the natural flow of the
action in a real one, is not to be aimed at. The
imitation must not be carried to the point of impossibility.
While it is false to say that an imitation must be an
exact imitation of the subject on certain conditions subject to
which he is to compose, we are to look at those conditions
through the eyes of the dramatist, for example, in some
Charles Lamb's "Essays." The

Caesars are a distinct class of dramatic
composition; dramatic in form, and possessing a dra-
matic interest and crisis, but resembling epic works in their
episodical character. To deny them their own merit be
cause they are not what is called "the regular drama," is
like the one-sided exclusiveness of taste which despises a
Gothic cathedral simply because it is not a Greek temple.
The beautiful in art is not confined within such narrow limits.
In the antient tragedy there is generally a solemn and
glorious, but often a mysterious, element. Some old
unexcited crime weighs down the hero and his house;
the highest qualities of the human soul are exhibited in his
struggles with fate, until the whole closes in darkness and destruction. The chorus was a peculiar
feature, rendering, it may be observed, all notion of illusion
doubly absurd. Its fate, Twining remarks, was curiosus;
first it was all, then it was relieved by dialogues, then subor-
dinated, at last it disappeared. It is said that in ancient
Euripides it ceased to be part of the play. In its proper
application in tragedy, it was a lyrical accomplishment
reflecting as it were the general imagination of the age. A
sort of abstract speech, as Schlegel calls it (die idyllische
zuschauer).

The works of Shakespeare, and in a far less degree those
of Calderon, have exercised enormous influence in modern
Germany. Their renewed study in fact roused the spirit of
rebellion which has completely burst the fetters of the
French school of criticism, and inspired the dramatic
Genius of Schiller and G öthe.

3. We have already stated that the division of poetry
given above is not put forth as exhaustive or complete.
We cannot pretend, in the space of this article, to discuss
all the various forms of poetic composition which have
prevailed, but we shall conclude by saying a few words on
the subject of popular poetry and ballads.

There are for popular poetry and ballads no true rules as to
how 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
strains of this kind, quoted or sung, which have 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 "Volklieder" gave an additional impulse to the
ballad, and his earliest version of the ballads of the "Cid"
has become a German classic. The story of the "Robin
Good," and the debt which they owed for the first step; Bürgcr's
"Lenore" and his other works reacted on Scott. In the
"Border Minstrels" and the researches connected with it, a
field for the study of the spirit of the old stirring songs which he took such pleasure in
collecting and editing.

The Danes, the Germans, and the Scalian nations,
especially the latter, have produced a good deal of 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 author sometimes figures at the rear of the plot, sometimes
is absent throughout, and sometimes, according to his
imagination, he does not narrate evenly and uninteruptedly, but
spasmodically. As far as we are aware, it were from one projecting point of the story to another,
leaving to the imagination of the reader the task of filling up
the intervals. Handled for a long period by word of
mouth, these ballads have suffered mutation, 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
place has been adapted for another, but in general, 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 often long, and the rhymes are incomplete, as are also
the narrative parts of the ballad. The picturesque parts,
the rhymes of the Chieftains, the foam of the waves,
Carpio, the "Chise of Roncevalles," the "Infants of
Lara," but above all the history of the Cid and the later Moorish
wars. The Spanish ballads are generally free from the
gritty 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 "canziones," are in
their way just as old and beautiful. Some of the best seem to be
exquisite and absurdly lost.

Of the effect of popular poetry on the events of real life
in times of revolution or disturbance it is unnecessary to
speak. These compositions which would seem to be the
lightest and most trifling productions of human creatu-
ration, are found in immediate contact with the sternest
realities. Selden observes, "More solid things do not show
the complexion of the times so well as ballads and libels, "
and we may add, "more than the author knew." The word "A
y de mi Al-
hamis" was forbidden to be sung in the streets of Gran-
after the conquest. We have in Percy's collection the
satirical ballad of "Richard of Almaine," composed with
sense of reference to the reign of Henry II. and his barons.
Popular poetry played its part in continental Revolution.
The absurdities and vices of the clergy were an
inexhaustible theme at a later period. The song of "Li-
libelour" probably did much to facilitate the Revolution
of 1688. Burnet (Open Times, iii. 336) says of it. "Perhaps
Vol. XVIII.—2 R.
never had so slight a thing so great an effect.' The 'Mar-
seillaise,' 'Ga ira,' and 'Tragalia' played a still more promi-
nent part in the convulsions of modern times.

POGGIO. [BRACCHIOLINI.]

POGGY ISLANDS. [NASSAU ISLANDS.]

POGGYNIAS. [BARBERTS.]

Mr. Swainson makes the
Buccinoc, a subfamily of the Buccinidae, placing it
under the Bucciniae, at the end of the family. He character-
ises the Buccinocae thus—'Bill surrounded with long
bristles. Tail short, soft.'

The following genera and subgenera are arranged by Mr.
Swainson under this subfamily:

_Asthenurus_, Sw. Bill short, compressed, very straight.
Rictus smooth. Wings with the first three quills graduated.
Tail moderate. Versatile and anterior toes nearly equal.

_Tropical Asia._ (Sw.)

Example. _Asthenurus exilis._ Ph. Col., 371, f. 2.

_Pucuminus._ Temm. Habitat of Asthenurus, but the rictus
is bristled; the tail very short and not projecting beyond
the wings. _Tropical Asia._ (Sw.)

Example. _Pucuminus abnormalis._ Ph. 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.) (Barberts.

Subgenius Micropogon, Temm. General structure of
_Bucco_; but the gape smooth. The first three quills only
graduated. South America only. (Sw.)

Exoni _Cayennensis._ _H._ Enl., 206, f. 1.

Genus _Pogonias._ Ill. General structure of _Bucco_; but
the margin of the upper mandible distinctly toothed. Africa
only. (Sw.)

Under a line of demarcation, Mr. Swainson adds the
genera _Yunz_, Linn., and _Oxyrhynchus_, Temm. (_Classification
of Birds._)

Mr. G. R. Gray arranges the _Buccinocae_ as the first sub-
family of the Buccinidae, and makes it consist of the following
genera:—_Pogonias_, Linn.; _Bucco_, Linn.; _Micropogon_, Temm.;
_Polytiote_, Smith; and _Polipogon_, Boie.

Pogonias is also Lacépéde's name for a genus of Acant-
ophorine fishy species placed by Cuvier under his family
Scorpaenidae.

POINCIANA ACULEATA, or the Barbadoes Flower-
Fence, is a tropical leguminous bush, about ten feet high,
with bipinnate leaves, obovate leaflets, prickly branches,
large terminal corymbose masses of inflorescence, covered
with showy yellow or red flowers, having singularly long
stemanes. It has acquired its name from having been used,
or account of its prickly branches, as a material for house
building by the West Indians, for which however it is ill adapted,
because its branches are not much subdivided, 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
India Islands, and in which country it is found growing
throughout the whole year. 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.

[This section is not available for natural text representation.]

POINT OF CONTRARY FLEXURE. By this term
is understood a point at which a curve changes its curva-
ture with respect to any given external point, being concea-
ved on one side and convex on the other. [See the figure in
_Curving_ for instances.]

The mathematical test of a point of contrary flexure in a
plane curve is as follows. Let y = $\frac{dy}{dx}$ 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 and y' have different signs, its concavity. When y'
changes sign, there is a point of contrary flexure, if y be
then finite; and this whether it passes through zero or is
finite. (I. _Practical Use 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; there is no necessarily
such a point with y'' = 0, and there may be 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 $y = x^2 - \frac{1}{x}$ which gives $y'' = -\frac{2}{x^3}$.

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 0, and when x > 1, y and y'' are both 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 noticed that though the curve $y''$ flexure the curve 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 concavity 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 DÉ GALLE. [CEYLON.]

POINT WELLESLEY, Province of. [PENANG.]

POINTER, a variety of the Dog used in shooting.

POINTER, the variety of the Dog used in shooting, and
trained as a game-maker where there is no hunting.
This society is the Chien d'arrêt of the French, and the
Cantis familiaris aecularis of Linnaeus.

The old Spanish pointer was slow but very sure; and
after all, where game is hard to get, and on light lands is of
great service to be picked up before one of these heavy but staunch dogs,
now rarely to be found, as with the modern breed, in which
swiftness is carried almost as far as it can. Not that
some of these thoroughly fine-pointed dogs are not
staunch as any puppy of the old order, and there is some
thing very 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-pointed modern pointer is staunch, all who have
seen him in the field will know and say it is recorded of Piuto and
Juno, the two beauties which are immortalised in Daniel's
' Rural Sports,' that they kept their point while Gilpia took
the sketch from which the picture was painted, upwards of an hour and a quarter. Steady
enough to stand a day's work; a dog of that breed was intended for
these, well-bred fine-pointed 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 Sebright, 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 having 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 sub-
ject of poisons generally, referring to the articles AEROSIN,
ANTONYMP, COPPER, MERCURY, PAPAYRE, &c. for the de-
tails relating to those in particular. 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, for instance, such as the previous 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 or successively affected in a manner showed, we propose only how in any individual case the influence of poison may be proved. The chief circumstances in the evidence will be, the symptoms presented during life; the examination of the body, both internal and external; the chemical analysis of the substances in which the poison may be; and it is 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 have been that the person affected has suddenly attacked by symptoms of severe illness, which come on so 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 good health. It 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 instantaneous death, though a premonitory insidious increase of symptoms is not a more distinctive sign of poisoning. It is equally observed in many cases of the diseases already mentioned, as well as in most acute and uncontrollable 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 an insensibly occurring disease. But on the other hand, the absence of any or all of them is not 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 moderate of the symptoms. Many circumstances will retard the action of even large doses of poison; if a person falls asleep soon after taking them, or if he has drunk 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 so devoured by some other medicine, as in the form of a vapour, by applications to the ulcerated skin, &c.

Dr. Christie divides poisons into three classes, irritants, narcotics, and nucroso-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 irritant 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; difficulty of swallowing, burning pain of the stomach with nauseae 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 or the whole of the alimentary tract, and the tension on pressure, and usually a constant and painful diarrhous 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 restlessness, constriction of the arteries, and manner, and often a disagreeable difficulty of breathing.

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 those of the alimentary canal.

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 known substance. M. Louis and Dr. Abergombe, whose authority is of the greatest weight in subjects of this kind, have never seen a case of idiopathic and primary acute gastritis; and it seems certain that no established case of the kind has yet been recorded: the inflammation of the stomach 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 or soon after swallowing with the alimentary canal; 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 never bloody, and is usually accompanied by much more feverish excitement than 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 before 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 eyes, and constipation of the bowels, by the suppression of all the secretions except the characteristic discharge from the stomach and intestines.

The symptoms of common peritonitis and of common acute enteritis (Pleuritis; Enteritis) do not very clearly 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 respiration, 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 colic, there may be some deviation from the normal; but the observation after death shows them to have resulted from an obstruction of the intestinal canal.

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 overheated. 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 while they have been carefully observed, much doubt has remained respecting their cause; and, on the other hand, the symptoms 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 case condition of the patient after death) the 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 inflamed by the poison, even in the shortest interval of time; but 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 that a large portion of the redness of the stomach, which is occasionally seen, given shortly before 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 membranes, as from straitness of the chest; but it is not to be considered as 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 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 streaked with blood, and the bloody mucus carries with it the redness of the lining of the redened 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 always an effect of poisoning, and tough mucus is often mistaken for it; they may be distinguished by the former beingropy, glaring, and transparent, the latter opaque, white, and deposited in a smaller body of the mucus or in the stomach. The effusion 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 of the stomach, or with the appearance of a bloody 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 corrosion of the tissues, or by a 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 result of disease, is the fact that the digestive canal with which poison has come in contact is affected at the same time, the lips, mouth, oesophagus, 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 appearance 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 also always observed in the ulcerating 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 produced by corrosion.

Ulceration 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 of the presence of poison; and so there be no other evidence, and no attendant 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 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 poison, by the manner of their 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 an inch in thickness, and with much scar formation in the lining or other tissue around it. The thickening around the ulcer, which has all the characters of chronic inflammation, is in no disease of the stomach, without the commencement 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 presence of foreign cerumen, or some other foreign substance in the alimentary canal. The fourth is that in which a portion of the walls of the stomach is dissected or digested by the gastric juice after death; but whatever uncertainty there 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 and more especially the course of the disease that irritating 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 distinct from perforation of the abdominal organs; while in the more morbid cases of the stomach in which the morbid changes of structure are less decisive are those in which the symptoms admit of little doubt. This however cannot apply to all, though it may apply to the majority of cases. When death is produced by a poison, the symptoms may be obscure, and the morbid changes vary 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. In such individuals, 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, 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 is the insensibility, and power of the eyes is lost, the sight, 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 poisons are peculiar to themselves; yet not so remarkable but that they are occasionally simulated by cases of 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, occasional giddiness, &c. If severe enough 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 poisoning with opium the stomach, 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 be found serve further than to establish a very probable conclusion, and due caution in all cases in this kind after a post-mortem examination. The evidence of poisoning afforded by it is commonly negative; the mere presence of an opium form of indigestion is insufficient to establish the appearance of the stomach in 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 apoplexy. In others, however, they lead exactly resemble those of that disease, whether of those cases it which are attended with effusion of blood in
or upon the brain, or of those in which only the least possible alteration from the healthy structure can be detected.

(Apoplexy.)—Effusion of blood in the brain is however very rare, and the appearance and, as if by itself, would afford strong evidence of apoplexy the result of disease.

The symptoms of epilepsy are often very like those of poisoning by prussic acid, and by some other narcotic and narcotic-acid and nitrous, strychnine, &c.

The following circumstances however distinguish epilepsy: the fit is often preceded by warnings; it almost always commences suddenly and violently; the patient cannot be roused or roused; when fatal (which it very rarely is in 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 whether the disease is common to them and to the narcotic poisoning. But in many, traces 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 order to allude to the difficulty that may arise here 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 fit cannot be ascertained within the first day or its duration; the poisoning is by that time terminated either by recovery or death; the disease continues its progress; and if the latter ends fatally, the morbid changes that it causes are sufficiently characteristic.

On the whole it must be concluded that the evidence afforded by symptoms and morbid appearances is less frequently conclusive in cases of poisoning by narcotics than in those where it is produced by irritants. The effects of the narcotics and the narcotics-acids, which are composed of those of the two other classes, are also in most cases as uncertain as those of the narcotics, and the difficulty with them is much increased by the present imperfection of the chemical tests of their presence in organic 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 symptoms in any animal to which it is given, it ought to be discovered 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 often decisive. The symptoms 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 poisons, and in some cases it is only in the hands. In these also, as we have already shown, the evidence of symptoms and of the morbid appearances, is also often fallacious; and cases must frequently occur in which the evidence from these sources together will not constitute a proof that poison has been taken. In the case of irritating poisons, on the other hand, the cases are few in which, from one or other of these kinds of evidence, their administration may not be satisfactorily proved.

We come then to the substances which should be administered in cases of poisoning, as early as possible after it has been swallowed.

Mineral acids (sulphuric, muriatic, &c.).—Chalk* or magnesia in water; soap and water, and afterwards milk and other digestives.

Akhala (soda and potash).—Vinegar and water; almond or olive oil; any innocent acid with water.

Arsenical.—Large quantities of chalk or magnesia; afterwards milk and other mild fluids.

Arsonic.—Powerful emetics if vomiting has not commenced; large quantities of milk or some thick bland fluid, such as flour and water, or sugar and water.

Corropted substances and other compounds of mercury.—White of eggs beaten up with water; decoction of bark or gall nuts.

* In any case in which chalk is recommended, the plaster of the either walls of a room rubbed into powder and mixed pretty thickly with water may be used with equal advantage.

POI 309

Blue vitriol and other compounds of copper.—White of eggs or milk; sugar and water.

Antimy.—Large quantities of warm water or milk; decoction of bark or gall nuts.

Nitrate of silver (lunar caustic).—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 soda or potash and milk.

Laudanum and other preparations of opium.—Emetics; dashing of cold water on the face; strong coffee; forced exercise by constant walking.

Prussic acid.—Harshons, to be smelted and taken in small doses; chlorine; dashing with cold water.

Strychnine, and other vegetable alkaloids.—Emetics; warm water; decoction of bark or of gall-nuts.

For other, as well as for these kinds of poison, it will always be right to expect copious vomiting, either by tickling the throat, or by giving a powerful emetic, such as from ten to twelve grains of sulphate of zinc (white vitriol), or the same quantity of powdered ipecacuan with one or two grains of powdered antimony. 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 and alimentation no rules can be given.

POISSY. [Seine et Oise.]

POITIERS, a town in France, capital of the department of Vienne, on the river Clain, a feeder of the Vienne, about 10 miles west of the town, 20 miles south of the road through Orleans, Blois, and Tours; 46° 36' N. lat., 0° 29' E. long.

This town was known to the Romans by the name of Placentia [Aquitaine], Poitiers, or Lémunia (Lemunio, Loth. Poit. Dig.); and it was the chief town of the Poitiers, or Pictavi, a Celtic nation, whose name, was, at a latter period, given to the city, whence the modern forms of Poitiers for the town, and Poitou for the province in which it is situated. This city, the most important of the two sub-divisions of his command (Cesar, De Bell. Gall., lib. iii., 11), but afterwards sent eight thousand men to the general confederacy of the Gauls under Vergunetius (a. c. 52). In the year following Durutius (a. c. 51), a chief of the Pic- tones, who with part of his countrymen had remained faithful to the Romans, was besieged in Limouin by the insurgent Gauls under Dumnacus, a chief of the Andes, or po- rciages, who took the town, but the victory was gained by the agency of C. Caninius Rebulus, one of Cesar’s lieutenants, whose camp Dumnatus vainly attempted to storm; but the force of Caninius being insufficient to do more than repel the enemy from his camp, Dumnibus presumed the success of Lyons and was only driven from it by the approach of Fabius, another Roman officer, with a superior force. (Cesar, De Bell. Gall., lib. viii., 75; lib. vii., 26, seq.)

Upon the downfall of the Western empire, the city of the Pictones repeatedly suffered. It was pillaged (A.D. 410) by the Vandals; and subsequently came into the hands of the Visigoths, who extended their dominion over all the coun- try south and west of the Loire. In the subsequent inva- sion of the Visigothic kingdom by Clovis, the victory of Quivy, which we take to be Vouillé, a village on the river Aurance, a few miles west of Poitiers. In A.D. 732, the suburbs of Poitiers were laid waste by the immense host of invading Saracens, under Abu-El-rahman. The town surrendered to Charles Martel under Charles Martel, in the second of the engagements which have rendered the name of Poitiers memorable. The slaughter of the Moslems was great; but the victory was dearly bought, and Charles did not venture to pursue the retreating enemy. This was the first appearance of the Mohammedan conquest was however checked, and western Europe was saved from the Mohammedan yoke. In the ninth century, Poitiers was pil- laged by the Normans: it was at this time the chief town of an important county, called Poitou; and in the wars of the English in France, under Edward III. and his son Edward the Black Prince, Poitiers was the scene of the third memorable en- gagement. A body of above 2000 men at-arms, and 2000 foot infantry, under Sir John Chisholm, and 4000 English archers, had advanced from Bordeaux, under the Black Prince and Sir John Chandos, almost to the
Loure. In their retreat, they were intercepted near Poi-
tiers by the French army of about 50,000 fighting men un-
der the command of Marshal Villars (a.d. 1356). In re-
sertion of the capture of the bishop of Bordeaux. There are a subordinate court of injustice and a {310} court of admini-
strative government offices, a chamber of manufacturers, a {4} society of agriculture, commerce, and arts; a faculty of law 
attached to the Académie Universitaire, a royal col-
lege, and a number of minor religious institutions, such as 
the diocesan seminary for the priesthood; secondary schools of 
music, surgery, and pharmacy, with a cabinet of natural 
history; a public library of 32,000 vols.; a free 
school for drawing and architecture; a botanical garden, 
where lectures are given on mineralogy; several 
hospitals; a maternity society, and a theatre.

The arrears of Poitiers has an area of 760 square 
me, and comprehends 62 communies. It is divided into 
two departments, each under a departmental council. 
The population in 1831 was 94,770; in 1836 it was 95,059.

Poitou, a province and military government of France 
before the Revolution. It was bounded on the north by 
Anjou, 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 Brittany. Its form was irregular, extend-
ing in length 166 miles, and in breadth 118 miles. The con-
querors returned to Bordeaux too much weakened for fur-
ther operations, and anxious rather to secure what they had 
got, than to obtain further advantages. Poitiers was sur-
rendered to the English by the treaty of Bredyng (a.d. 
1360), but reverted to France by the voluntary surrender 
of the townsmen, in 1372, to Charles V., who, in considera-
tion of this act, granted them great privileges. In the reli-
igious wars of the sixteenth century, the townsmen, who 
had chosen the Huguenots for their patron, suffered much 
from the cruelty of the Roman Catholics, who besieged and 
took the town. Admiral Coligny afterwards endeavoured to 
retake it, but without success.

It is a rocky hill, at the confluence of the rivers Bievre, or Bèvre, and Clain. It is surrounded by 
an ancient wall, enclosing an oxbow of sufficient width 
for a population of 80,000 or 100,000; but the area 
covering the town is merely a paddock, or meadows, 
than by houses. There are six gates, four of which are 
connected with as many bridges over the Clain. The streets are crooked, and wretchedly paved, and most of 
them steep. The squares are small, irregular, and many of them except in 1809, is still its most ancient 
character, as seen in villages, without regularity, taste, or convenience. Yet, notwithstanding 
these drawbacks, the town, from the air of antiquity with 
which it presents itself, from its advantageous situation on 
the slope of a hill, and from the winding course of the two 
rivers, presents, when viewed from the adjacent emi-
ences, a very picturesque appearance. The public walk 
called Le Parc de Blossea, on the banks of the Clain, 
commands a beautiful prospect, and the public build-
ings of the town are interesting from their antiquity, if 
not remarkable for beauty. Near the city, on the south 
side, there is the arch of a Roman aqueduct, and in the town are 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 is well built, and its architecture is in a good state 
of preservation. The cathedral is very ancient, it was com-
manded by Henri I. of France (a.d. 1042, 1060), and fin-
is hed 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 architectural proportions are
by simplicity and boldness; but the organ-loft is modern, 
and ic 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 Sainte-Radegonde is remarkable for its wide 
and handsome nave without pillars. 

The population in 1831 was 23,128; in 1836, 23,000. 
Poitiers is not a place of much business. Common woolen 
cloth, coarse flannel, and blankets; cotton wicks for lamps 
and candles; honey, hogs, and wax; leather, shoe-kits 
and goose-kits 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, 
wool-goods, sugar, and wines, are two ways of 
the markets, and two, or according to other authorities, six 
fairs in the year. There are quarries of freestone in the 
neighbourhood. Poitiers is the seat of a Cour Royale 
and an Assize Court, which is a circuit comprehending the 
departments of Vienne, Charente, Charente-
suffrérie, 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 arch-
bishop of Bordeaux. There are a subordinate court of 
justice and a court of administration, a chamber of manu-
facturers, a society of agriculture, commerce, and arts; a faculty of law 
attached to the Académie Universitaire, a royal col-
lege, and a number of minor religious institutions, such as 
the diocesan seminary for the priesthood; secondary schools of 
music, surgery, and pharmacy, with a cabinet of natural 
history; a public library of 32,000 vols.; a free 
school for drawing and architecture; a botanical garden, 
where lectures are given on mineralogy; several 
hospitals; a maternity society, and a theatre.

The arrears of Poitiers has an area of 760 square 
me, and comprehends 62 communies. It is divided into 
two departments, each under a departmental council. 
The population in 1831 was 94,770; in 1836 it was 95,059.

Poitou, a province and military government of France 
before the Revolution. It was bounded on the north by 
Anjou, 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 Brittany. Its form was irregular, extend-
ing in length 166 miles, and in breadth 118 miles. The con-
querors returned to Bordeaux too much weakened for fur-
ther operations, and anxious rather to secure what they had 
got, than to obtain further advantages. Poitiers was sur-
rendered to the English by the treaty of Bredyng (a.d. 
1360), but reverted to France by the voluntary surrender 
of the townsmen, in 1372, to Charles V., who, in considera-
tion of this act, granted them great privileges. In the reli-
igious wars of the sixteenth century, the townsmen, who 
had chosen the Huguenots for their patron, suffered much 
from the cruelty of the Roman Catholics, who besieged and 
took the town. Admiral Coligny afterwards endeavoured to 
retake it, but without success.

It is a rocky hill, at the confluence of the rivers Bievre, or Bèvre, and Clain. It is surrounded by 
an ancient wall, enclosing an oxbow of sufficient width 
for a population of 80,000 or 100,000; but the area 
covering the town is merely a paddock, or meadows, 
than by houses. There are six gates, four of which are 
connected with as many bridges over the Clain. The streets are crooked, and wretchedly paved, and most of 
them steep. The squares are small, irregular, and many of them except in 1809, is still its most ancient 
character, as seen in villages, without regularity, taste, or convenience. Yet, notwithstanding 
these drawbacks, the town, from the air of antiquity with 
which it presents itself, from its advantageous situation on 
the slope of a hill, and from the winding course of the two 
rivers, presents, when viewed from the adjacent emi-
ences, a very picturesque appearance. The public walk 
called Le Parc de Blossea, on the banks of the Clain, 
commands a beautiful prospect, and the public build-
ings of the town are interesting from their antiquity, if 
not remarkable for beauty. Near the city, on the south 
side, there is the arch of a Roman aqueduct, and in the town are 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 is well built, and its architecture is in a good state 
of preservation. The cathedral is very ancient, it was com-
manded by Henri I. of France (a.d. 1042, 1060), and fin-
is hed 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 architectural proportions are
by simplicity and boldness; but the organ-loft is modern, 
and ic 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 Sainte-Radegonde is remarkable for its wide 
and handsome nave without pillars.

The population in 1831 was 23,128; in 1836, 23,000. 
Poitiers is not a place of much business. Common woolen 
cloth, coarse flannel, and blankets; cotton wicks for lamps 
and candles; honey, hogs, and wax; leather, shoe-kits 
and goose-kits 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, 
wool-goods, sugar, and wines, are two ways of 
the markets, and two, or according to other authorities, six 
fairs in the year. There are quarries of freestone in the 
neighbourhood. Poitiers is the seat of a Cour Royale 
and an Assize Court, which is a circuit comprehending the 
departments of Vienne, Charente, Charentes-
suffrérie, Deux Sèvres, and Vendée, and of a bishopric, 
the diocese of which includes the departments of Vienne
the sole authority in his county, to which he added the county of Auvergne, the duchy of Guillaume on the death of Raymond Pons, count of Toulouse, who had possessed these dignities. The lords of Guillaume and the people of Auvergne however, being attached to the house of Toulouse, refused to acknowledge Guillaume, though Louis d'Outremer had invested him with the dukedom and Hugues de Lohaniere, count of Paris, prevailed on Lohaniere, who had just succeeded Louis, to grant the duchy to him. Hugues and Lohaniere advanced with an army into Poitou, and laid siege to Poitiers (A.D. 952); but the attack was unsuccessful, though the invaders cut off to pieces the army of Tite d'Etope, who attacked them on their retreat. Tite d'Etope ultimately succeeded in possessing himself of the counties of Auvergne and Berry, and becoming duke of Berry. But Hugues de Lohaniere, as well as in his county of Poitiers, was succeeded (A.D. 963) by his son Guillaume II.

Guillaume II, surnamed Fier-a-bras (Fera brachia, or Fera brachium) from his great strength, was obliged to cede Lodel 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-a-bras made peace with Hugues Capet, and soon afterwards abdicated his honours and retired to a monastery at Moret (A.D. 989), where he was named Le Grand, to whom 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 marriage rights to Guillaume le Petit, and became the sovereign of the county of Marche, and extended his territories from the Atlantic to the Rhone. By a subsequent marriage he acquired the duchy of Gascony; 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 but a means to enslave one, he declined accepting it, and stood in high esteem by the princes 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 Gros, who was engaged in war with Geoffroi Martel, count of Vendome, and afterwards of Anjou, who had married the widow of Guillaume le Grand. He was engaged in a hereditary right to the county of Anjou, and the duchy of Gascony, to which Geoffroi Martel was the heir, the adventurer of which he burned; and having defeated Guillaume at Montcorneuf (A.D. 1034) and taken him prisoner, released him only on condition of his ceding the counties of Saintes and Bordeaux, and the duchy of Gascony, to Geoffroi Martel (A.D. 1038).

Eudes, son of Guillaume le Grand by his second wife, who had inherited from his mother the duchy of Gascony, succeeded his half-brother Guillaume le Gros in the county of Poitiers and duchy of Aquitaine. He engaged in a 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 Haril, a son of Guillaume le Grand by his third wife, succeeded Eudes in the county of Poitiers and duchy of Aquitaine (A.D. 1039), but not in the duchy of Gascony; of which Bernard, count of Armagnac, possessed himself. He too was engaged in war with Geoffroi Martel; and in doing so, finding himself with whom he was engaged in such a manner as to give a start to Guillaume his own brother Gui-Geoffroi, who had previously acquired the duchy of Gascony by the expulsion of the count of Armagnac. On the death of Guillaume le Haril, Gui-Geoffroi succeeded, and took the name of Guillaume VI. (A.D. 1058.) He united under his government a considerable portion of the south-west of France, and recovered the county of Saintes from the house of Anjou; the county of Bordeaux had been previously restored. He died in 1086, and was succeeded 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, but son of Raymond, the sainted count, lord, 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, and the license in social matters in which the knightly grims. This expedition was designed to strengthen the newly founded kingdom of Jerusalem, and comprehended among its leaders Anseline, archbishop of Milan; Guelph of Lorraine, count of Besançon; and James II., brother of Philippe I. of France; Geoffroi, count of Vendôme; Etienna, count of Blois; Herpin, viscount of Bourges; Etienna, count of Bourgogne, or Franche Comté; and other nobles of France, Lombard, and Southern Comté. 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 dissolve-
pears 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 the times.

Poitou was given by Louis IX. to his brother Alfonso, 
upon whose death (A.D. 1271) the title of it was disputed 
between Philippe le Hardi, king of France, son of Louis IX., 
and Charles I. of Anjou, king of Naples, and Poitou was 
included in the principality of Aquitaine ceded by the treaty 
of Bretigny (A.D. 1360) in full sovereignty to Edward III. of England, who 
bestowed it on his son the Black Prince as a dependency of 
the English crown. [Bourdax]. The defeat of the 
English fleet by the Castilians off Rochelle (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 marriage with the princess of the house of Savoy, from 
which it was never afterwards alienated. (L'Art de 
voir les Dates; Sismondi, Hist. des Francais.)

POKE. [Phylolacca.]

POLA, ANTIQUITIES OF. [ISTRIA.] The most remarkable 
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 all its kind, it is divided into two distinct parts, and its 
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 the one 
at Plovdiv, where the difference between the length and the height is 
506 and 404 feet; yet it is a trifle 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 a much less perfect specimen of that peculiar mode of robust work (Rustich) with deep 
channels (as well as for the rouviers or the arches for the 
horizontal courses), which was afterwards so greatly affected by 
the ancient Romans; it is probably the work of the 
architects of the Florentine school; and it is further remarkable 
for the irregularity both of the depth of the columns 
and of the size of the stones themselves, owing to which 
last circumstance their joints do not show in 
any work of such magnitude and massiveness this 
decision of right angles so much as in the 
idea of rude strength as it detracts from 
fledged 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 architrave and 
fringe being supplied by horizontal courses of rustices—are 
each 122 arches high. In each of the 
eight, every 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 differ- 
cence from that of other 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 lowest of the steps, while on the cast it does not 
exceed half that elevation.

Pola possessed also a theatre, but it is now known only 
upon the rude sketches given of it by Serlio, in his work 
on architecture, the edifice itself having been destroyed for 
the sake of the stones, 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 
columnade or otherwise, so as to constitute one general 
architectural line, cannot now be determined with the 
required precision. The vanished temple of Augustus was 
converted into a modern habitation. Although incon- 
siderable as to size, its external dimensions, including 
the portico, being no more than 62 feet by 31, it is remarkable 
for elegance of design and execution; and although it 
contains nothing of any great height, the attention of 
it is remarkable, as the latter forms a bold projecting portico, it being displ Bagstropc, that is, shows two open intercolumns on each 
flank, which is only one less than those in front. The 
order is Corinthian, elegant in its proportions and graceful 
with a frieze originally filled up by an inscription 
beneath the pediment, and decorated along the sides of the 
building by a rich Arabesque of foliage. One singularity 
in this example is, that whilst the shafts of the columns are 
quite plain, those of the antae, or pilasters at the angles of the 
cells, are fluted with five channels on their faces, which is 
precisely the reverse of the practice of the Greeks; yet this does 
not seem to have been an architectural error, but adopted 
with the purpose of bringing out the principal and 
distinct and more important features in the design; 
whence inscribed columns always arrest the eye, and de- 
tach themselves sufficiently from the rest. Much of the 
elegance of the columnar colonnade arises from the 
being raised upon a low unbroken style by deep mouldings, 
which in front forms the pedestals enclosing the steps 
leading up to the portico; and it is rather singular that 
Palladio, who among others has praised to admixture this 
structure, should not have discerned the superior propriety 
as well as beauty of such stylobate (the height of whose dado, 
or face, between its upper and lower mouldings, is even less 
than the diameter of a column), to those proportions which 
the coast of Istria has in time saved from such a fate more 
offensive when such members are inscribed, or else 
form projecting breaks, instead of a continuous podium, or 
footing on which the columns are raised.

Even the arch of Sergius, the other monument that 
remains to be spoken of, although by no means so pure in 
style and design as the preceding, exhibits lower propor- 
tions and greater solidity than usual in the pedestals to the 
columns. It has been conjectured that this arch, whose 
date is uncertain, and which now forms the south gate 
of the city, and is called the Porta Aurea, was intended rather 
as a private sepulchral structure in honour of the Sergii 
family, than as a public triumphal arch. The entire struc- 
ture consists of two arches, and is about 28 feet high, and 
summit of the attic, pierced by a single arch (13 feet wide), 
on each side of which are two Corinthian columns with the 
entablature breaking over them, and standing upon a pe- 
destal composed of steps of the modi- 
arches, these columns are not inscribed, but each pair 
consists of engaged columns, the one next the archway 
being rather more than a semicircle in its plan, and the other, 
which forms the external angle, being attached to that 
angle only for one-sixth of its circumference. The 
archway itself is exceedingly shallow, not more than four feet 
in depth, consequently a mere opening in a wall, and not a 
passage through a mass of any depth; and that it was 
never intended to be a place of access from the outside 
from being columns in the other front, though these last 
are only rudely sketched out, without having ever been 
finished. Yet although shallow, the inner part of the arch 
is very richly decorated, both in the relief of its columns 
and the space between the impost and the bases of the 
columns, whose mouldings, as well as those of the pele- 
tals, are continued through the arch. 

For a more detailed description of these ancient 
monuments we refer to the fourth volume of Stuart and Revett's 
'Athens,' and to Allason's 'Pola' for tastefully executed pic- 
torial representations of them.

POLAND. The comparatively small portion of the once 
powerful empire of the Czars of Moscow, which, under the 
name of the Kingdom of Poland, forms an integral part of the 
Russian empire, is nearly of a quadrangular shape (exclu- 
sive of a long narrow tract of which we shall speak pre- 
viously), and is situated between 50° 0' and 50° 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, but where the Vistula empties into the sea, its mean breadth of the southern quadrant 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 topographical maps, is 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 East Galicia and Podolia; on the north 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 poor country, it possesses considerable soil diversity, and some districts raise many hundred 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 or 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, stretching along the eastern coast of that sea, and between it and the North Sea, extends eastward, at a varying distance from its shores, to the heights of Waldai and the source of the Volga, into the centre of Russia. The most elevated parts of the surface of this tract are covered with soil, but the other 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 observed sometimes about 400 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 countries are accordingly in general much more fertile than the south. 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, buckwheat, 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 summer, constituting the swamps of lower Poland. Such tracts occur especially along the rivers Bug, Narov, and Bobr; the last-mentioned river falls into the Narov. These low tracts, when drained, might probably be converted into valuable pastures, as some parts of the swamps of the region 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 Vistula.

The most southern districts of Poland, the greater part of the province of Cracow and Sandomir, 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 surface of the Vistula above Sandomir 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, more than 1000 feet, which may be considered the mean height of nearly the whole country between the Vistula and Piłica, with the exception of some tracts along the banks of the first-mentioned river. The highest portion of this region is reached when it crosses south-west to north-east, beginning north-west of the town of Cracow, where the small town of Olkus is built on a hill whose summit is 1240 feet above the sea-level. From this place it runs to Kielce, to the east of which town, near the convent of Swieto Krzyz are two high summits, called Lysegora and Lysycyca, which attain an elevation of between 1900 and 2100 feet above the sea-level. The country between the Vistula and the Duna is hilly, but it 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 Sandamir wheat, and fetches the highest price. On the west of the Vistula river, and in the vicinity of the town of Pless, which is distant only a few low hills. Near 51° 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 to the south and the rivers which run to the north, 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 to the east 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 this 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 the Vistula. Thence it is raised to a line of high ground 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 moderate inclination than those of the southern declivity, and are covered with a thin and scanty vegetation. 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 not nearly all the year covered with water, and they serve only as pasture-ground in the latter part of the autumn and the beginning of the spring. Such swampy tracts occur on the banks of the Vistula, but especially on the river Warta. These tracts are covered with pastures, and forests, consisting mostly of coniferous, especially pines.

**Climate.**—The range of the temperature is above 100 degrees in the course of the year. The summers are generally very hot, the thermometer reaching 90°, when the south-eastern 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 12°. The winters are very cold; the thermometer generally descends to 10° below zero, and sometimes, though not every year, to 15° and even 16°. The country is usually frozen and covered with snow for four or five months; the range of snow in spring is very considerable; it fortifies 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 days, from which the country is invisible and is kept in a damp and unhealthy state until it begins to suffer from the dry weather. Slight fogs occur in spring and autumn.

**Rivers and Lakes.**—The most considerable rivers are the Niemen and Vistula or Wisła [Niemien; Vistula], which 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 Bug and Seret, which join several miles above its mouth by the Narov. The two last-mentioned rivers are navigable to a considerable distance; the Narov to the town of Lomza, and the Bug to Terespol, opposite the Russian town of Brest-Litovsk. From the west the Vistula receives the river Piłica, which is only navigable in the lower part of its course, and does not exceed 15 miles from its mouth. The river Warta, an affluent of the Oder, begins to be navigable above Kolo, and the river Derna, or Oronava, an affluent of the Oder, is only navigable to a point 5 miles above the town of Torun. The mentioned river forms for the greater part of its course the boundary-line between Poland and Russia. Lakes are frequent only in some districts. They are most numerous in the north-eastern province of Pomerania, where the largest are those of Angestowa, Duza, Wyzi, and Nerza, but they hardly exceed two miles in length. The largest lake, that of Gdło, which is about 10 miles long, lies on the north-western boundary-line. The larger and wider part of it belongs to Prussia.
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 north and east of the kingdom. Potatoes are cultivated in the other parts of the kingdom by rye, oats, and buckwheat; barley is also raised, but less extensively. Leguminous vegetables are much valued, and their cultivation attended to. Other fruits, however, are not generally grown 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. Walnuts are the inferior of those in Prussia, but rather numerous, and cultive, as well as vines 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 Ostrolenka, are annually floated down the Vistula to Gdansk. The Tsar has another forest, the Vistula, which goes from Gdansk 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 sells at a high price among the surrounding countries. Wild animals 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 Kielce, but the mines are only worked on a small scale. Coal is abundant, and considerable quantities are got out and smelted in the county about Oleszcz and Kielce in Cracow, and about Końskie in Sandomir, where it is cast and exported in barres. Copper and lead ore, but do not appear to be worked. Colombine 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 Checini, south-west of Kielce. 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 of very poor quality.

Divisions.—The kingdom of Poland is divided into eight provinces, which were formerly called wayships, 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 wayship of Cracow is included in the government of Cracow. It lies between 50° 8' N. and 51° N. lat., and between 19° 6' and 21° 12' E. long. It is bounded on the north-west by Kalisch, on the north-north-east by Sandomir, on the south by Galicia, on the south-west by Poznan, and on the east by Prussian Silesia. Its area, according to Hassel and Hirschelmann is 4450 square miles; the population in 1831 was 425,000, and may now be 450,000. The Vistula separates it from Galicia, and 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 pastures, forests, and valuable minerals, especially iron. It is divided into four wayships, or counties, viz., Cracow, Kalisch, Poznan, and Sandomir. The capital, or chief town, is situated in a picturesque country surrounded by high mountains; it has an episcopal palace, four churches, a convent of Gnoun, an ecclesiastical seminary, printing works, and, in the neighbourhood, mines of iron, lead, copper, coal, salt, and salt-works. The population is stated by Hirschelmann (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 Pinezow on the Nida, which has 4176 inhabitants. Charles XII. of Sweden defeated the Poles and Saxons near this town in 1702. Chenjery, with a castle on a lofty hill, and lead and silver mines in the vicinity, has 2500 inhabitants.

2. Sandomir 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 Podlachia, and on the south-west by Cracow, on the south-east by Masovia and Kalisch. Its area is 3900 square miles, and the population nearly 200,000. The Vistula divides in from Podlachia, Lublin, and Galicia; the Pilica, from Masovia and Kalisch. The face of the country is varied; the centre is composed of high hills, but there are forests and forests, with tracts of very rich fertile soil. It is divided into the four circles of Sandomir, Opaw, Radom, and Opoczno. Radom, the chief town, is on the river Radomka, has a Piarist college, a gymnasium, and 3500 inhabitants. Sandomir, on the Vistula opposite the mouth of the Saaz, has above 3000 inhabitants. It is a walled town, with six gates, and an ancient castle on a steep rock, which was railed by the Swedes at 1656. There are here a collegium cantum, four convent churches, a synagogue, and a gymnasia. This town is celebrated in ecclesiastical history for the Consensus Sandomirieniensis, drawn up in 1576, by the monks of the monastery of Bohemian, and for its celebrated history of Poland, for the confession of 1702. Opoczno on the Drezwica has an ancient castle and 3500 inhabitants. Opaw on the Opawica is situated in a fertile and populous county, and is a chief town. The convent churches, a synagogue, and 2500 inhabitants, chiefly Jews, who carry on a considerable trade, particularly in Hungarian wines. Stassow is a well-bait 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° 50' and 52° 40' and 20° 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 Sandomir, on the south by Cracow, and on the south-west by Silesia. The area is 6740 square miles, divided into five circles of Kalisch, Pietrakau, Konin, Sieradz, and Wielen. Cannabich says that the population in 1831 was 614,594. 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 unfruitful. The principal river is the Warta. Kalisch, the capital, one of the handsomest towns in Poland, is situated between two (Hassel says four, and Hirschelmann three) courses of the Warta in a marshy valley surrounded with hills. Most of the houses are large, and built in a 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, one Lutheran church, and 2477 inhabitants. Among the public institutions are several schools, but the gymnasium and the military school for cadets have been abolished. Woollen cloth and linens are manufactured here, and there are several tanneries. The Swedish general Marfield was defeated and taken prisoner near this town by Augustus the Strong, elector of Saxony, on the 29th October, 1706. In the centre of the province is the town of Kalisch, which 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 manufacture of woollen cloth, and 3500 inhabitants. Stolno on the Warta has 2650 inhabitants. Wielen has 3000 inhabitants, who manufacture some woollen cloth. New Czestochowa lies at the foot of the Krlenberg, on which there is a celebrated convent of the Holy Faith, the Hermit, which was formerly fortifi- ed and fortified by the Turks, but now is demolished. 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, embroideries, and other articles. 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° 53' E. long. On the south it is bounded by the Bug, which in this part is navigable, and on the east by the Vistula, which is navigable at this point between Narow and Sandomir. The Narow 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 the Plock extension of the Bug, and on the south by the Vistula, under the southern part of the Sandomir district, and on the north by the Oder and the Zbrucz. [POLSKA.]

6. Plock, or Pohossk, is situated between 57° 59' and 62° 25' N. lat., and 16° 26' and 22° 42' E. It is divided into the six circles of Plock, Jutland, Lipno, Miasta, Przasnysz, and Ostrowsko. The population is about 60,000, the capital of the government of which a description has been already given. [AGUSZTÓPOL.]

7. Podzamok, situated between 51° 15' and 55° 40' N. lat., and 18° 45' and 22° 53' E. long. It is divided into the six circles of Podzamok, Polska, Lipno, Dobszyn, Sadkow, and Malopolska. The population is about 60,000.

8. Podzamok is situated between 51° 15' and 55° 40' N. lat., and 18° 45' and 22° 53' E. long. It is divided into the six circles of Podzamok, Polska, Lipno, Dobszyn, Sadkow, and Malopolska. The population is about 60,000.

9. Podzamok is situated between 51° 15' and 55° 40' N. lat., and 18° 45' and 22° 53' E. long. It is divided into the six circles of Podzamok, Polska, Lipno, Dobszyn, Sadkow, and Malopolska. The population is about 60,000.

10. Podzamok is situated between 51° 15' and 55° 40' N. lat., and 18° 45' and 22° 53' E. long. It is divided into the six circles of Podzamok, Polska, Lipno, Dobszyn, Sadkow, and Malopolska. The population is about 60,000.

11. Podzamok is situated between 51° 15' and 55° 40' N. lat., and 18° 45' and 22° 53' E. long. It is divided into the six circles of Podzamok, Polska, Lipno, Dobszyn, Sadkow, and Malopolska. The population is about 60,000.
reign was disturbed by foreign aggression and domestic war. Vladislav's son, Boleslav III, or the Wry-mouth, was a great monarch, who rendered his reign illustrious by many notable actions. He was the father 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 (a.d. 1306) the dismembered crown of which might have become a centre of unity for that race and for a Slavonian empire. Poland recovered from this state of weakness under Vladislav II, surnamed, on account of his short and thin mouth, Wry-mouth; he restored the dismembered provinces, with the exception of Mazowia, which however remained under the sovereignty of the kings of Poland, and Silesia, whose dukedoms became legates to the king of Bohemia. Vladislav 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 exercised a strict control over his subjects, and was ever ready 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 King Casimir. The most formidable enemies were the Lithuanians, and the Teutonic order, whom Conrad, duke of Mazowia, called, about a.d. 1230, from the Holy Land to oppose the Prussian pagans, 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. Vladislav gained a great victory over them in the battle of Pł Worce, a.d. 1331. He was not the victor of Pł Worce for two years afterward. But the most memorable event of his reign is the first diet of Poland, which he assembled at Chynce a few months before the battle of Pł Worce.

The return 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, thus treading the footsteps of his Pagan predecessors. 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 king of peaceful times. His first order was published by Poland by his orders at the assembly of Vislita, a.d. 1347; 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 1722, 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. This he found at Pł Worce, which reigned in Poland from a date anterior to the introduction of Christianity, and ended with Casimir's death, 1370. He was succeeded by his nephew Louis, king of Hungary. This monarch, who was descended from Charles 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 Sicily, he continued a married life with the daughter of 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 children, and

A traditional or Biblican history of Poland relates that Messiaska, the son of King Kasimir, was the subject of an account of the great virtues and hospitality of the mediæval Polis, which was transmitted orally from generation to generation. Kasimir was slain by a Moorish, who was said to have been of the same family as the Moorish king of Egypt, and who had come to Poland in 1370, and continued in Silesia till 1672. Kasimir became afterwards a legal term applied to a king elected by the nobles of the country.

object 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 arrangement, his young daughter, Elizabeth, was married after his death, queen of Poland, a.d. 1382, and was crowned at Cracow, being then only 15 years of age. The extraordinary beauty of that princess, which was united to the most elegant qualities, rendered Hedwig's memory 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 sacrifice on the part of Hedwig, considering her attachment to William of Austria; to whom she was betrothed from her infancy. But this union effected the conversion of several millions of pagans, and changed a dangerous enemy into a powerful friend. Jagellon was elected king of Poland in 1447, and was crowned king of Poland and Lithuania. He married Elizabeth, the daughter of Casimir and Hedwig, a.d. 1447, but Jagellon, who on his baptism had received the name of Vladislav, continued on the throne till his death, a.d. 1492. 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 irresolute character of his reign. Jagellon's reign was marked by the fact that the Knights of the Teutonic order had spread widely in Poland. The Hussites sent several embassies to Jagellon, and offered to him the throne of Bohemia; but although he might thus have united Bohemia with Poland, he preferred to retain his sovereignty.

He permitted however the princes of his house to assist the Hussites against the Roman Catholics. Jagellon was succeeded by his son Vladislav III, a prince ten years old. He was scarcely of age when the Hungarians, threatened by the fast-spreading power of the Ottomans, invited him to their throne. The young monarch defeated the Turks (1443) in several battles, and advanced to within six days' march of Adrianople. The Musulmans sued for peace, and in 1445 an agreement was concluded, by which the Christian powers were to assist the Turco-Tatars against 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 Vladislav 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 desire of the inhabitants to confirm the hope of Vladislav'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 own vassal subjects the Lithuanians, whose nobles did not at this time enjoy the privileges 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 ascended the throne, 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 province with Poland. The inhabitants of that rich and fertile country were attached to the Teutonic order, declared themselves (1454) subjects 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. 1466, by the confirmation of 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 representatives of the Polish crown, called the Sejm, organization, a.d. 1468. It was determined that each district should elect representatives, and that these representatives should deliberate as a distinct body from the senate: and they had never been convened when it obtained the sanction of the king, the senate, and the nobles. These representatives, 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 incursions on the borders, and the Czar of Muscovy
seized an extensive tract of Lithuania. Casimir was a great promoter of learning, and he gave a very superior education to his three sons, who received their chief education in the great scholar, rector of the celebrated Italian scholar Philip Buonaccorsi, better known under the name of Callimachus Experienceus, who sought refuge at the court of Poland from the enmity of Pius II. His eldest son, John Albrecht, who was only twenty-five when he ascended the throne of Bohemia, in 1474, and in 1492 he became king of Hungary also. Casimir died in 1492, and was succeeded on the throne of Poland by his second son John Albrecht, and by his third son Alexander in Lithuania.

John Albrecht was a warrior prince but of a carless and indiscretion. 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 laws which were intelligible and just, and only rendered the opposition of that class the stronger. Having inconsiderately engaged in an expedition against the Wallachians, Albrecht's army was surprised by the enemy and completely defeated. The Turks, after invades 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.

As his acquisition of the crown of Poland. His 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 them. The Tartars also committed great devastations in the same country, but they were defeated by his favourite, Prince Gisinsk, 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 nobles.

After Alexander's death, his youngest brother Sigismund, duke of Troppau in Silesia, was elected king of Poland, having become by inheritance grand-duke of Lithuania. He found the affairs of both kingdoms in a very unfavourable state. The southern provinces of the kingdom were converted into a desert by the repeated invasions of the Tartars, and even some parts of Lithuania had experienced the disastrous effects of these devastations. The peasants of Silesia, 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 also 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 surpassed them in numbers. The resources of the Muscovite kingdom were much richer and more populous provinces; and his mandate was sufficient to prevail around his standard countless thousands. It was quite the reverse in Poland, where the turbulent nobility quarrelled among each other and with the king, and the military power of the country was so weak and scattered that the king could hardly trust the services of any body of troops he raised. The army was therefore small and the generals, who were already crushed by the oppression of the landowners. The crown was in possession of extensive domains, but they were generally granted for life to some noble, and the royal Alexander was of an easy disposition, which overcame by the firmness and prudence of Sigismund, and he was much assisted in his task by the treasurer of the crown, Bonar, who succeeded, by his great industry and strict economy, in putting Sigismund on the finances of the country. The revolt of Glicz, a most powerful Lithuanian grandee, who, having been educated at the court of the emperor Maximilian I, acquired great military skill in his campaigns, invaded Sigismund in a bloody war. Glicz, who had enjoyed supreme influence under Alexander, created many enemies, who attributed to him treasonable projects, and he was treated with perhaps injudicious harshness by Sigismund. He attacked and murdered, and was pronounced to be a traitor and an enemy of the country, and having committed that crime, he declared war with a great number of adherents, for the Czar of Moscow, who promised to elevate him to the dignity of a sovereign prince of Smolenk. Aided by the traitor, the Muscovites invaded Lithuania without success. Sigismund, though a brave king, but a brilliant victory obtained by the king in person stopped the progress of the enemy, who were expelled from the Polish frontier, and their own country was invaded. The spirit of insubordination among the army prevented Sigismund from obtaining any result from his victory, and he was obliged to accept the Czar's proposals of peace. It was concluded by a treaty which left the frontier of the same state as before the war. The families of Glicz and his adherents were permitted to join them in Muscovy, but many of them were pardoned and restored to their estates and former dignities.

Bohdan, prince of Moldavia and Wallachia, invaded (a.d. 1510) the southern provinces of Poland; he was however soon defeated, and compelled to conclude a treaty, by which he acknowledged himself the vassal of the kings of Poland. Paul II. of Venice, who had acquired the kingdom of Crete from the Turks, in 1499, and who had added various territories to his dominions, died in 1501, and his son, who succeeded him, was content to enjoy the title of lord of Crete. The Venetians acquired in 1479 the island of Cyprus, which had been the scene of many transactions of importance.

In the same year the Venetians were defeated by the Turks in an expedition against Egypt, and the Venetians were driven from the island. The Venetians were also defeated by the Turks in an expedition against the island of Cephalonia, which had been captured by the Turks.

Sigismund II. sent an embassy to Sigismund to compliment him on his recent success, and to propose to him to become the head of a league which that pope proposed to form for the expulsion of the Turks from Europe; but this flattering proposition was declined by the Polish monarch, and a brilliant victory over the Turks, in which 27,000 of those barbarians were slain, secured for a considerable time the tranquillity of the frontier. Sigismund married Barbara, daughter of Stephen Zapsy, waywode of Transylvania, who watched the Czar of Muscovy in the Alliance with Poland, which connected the two countries. The Czar of Muscovy invaded the frontier of Lithuania with an immense force, and took Smolenk. 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 Smolenk, which remained in the possession of Muscovy.

These events induced the emperor Maximilian to seek the friendship of Sigismund, whom he invited to a congress at Vienna in 1513. This meeting produced no advantage to either party, as the emperor was prevented by the emperor to the interference of the Teutonic order and the Muscovites on the behalf of Poland, proved entirely delusive. The matrimonial alliance between an Austrian duchy and a Jagellonian princess of Bohemia, which was agreed upon there, in the course of time, failed 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 very beautiful and accomplished princess, but of a childless marriage, and the Spanish marriage was not without success. Sigismund often said to her, 'Though I 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 proceeded from the Reformations. 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 saw many other occasions showed against the tolerant towards the doctrines of the Reformation, which was under his reign spread over all Poland. *Albert of Brandenburg, grand-master of the Teutonic order, having been

* In an answer to Eckius, 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 poets 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. The duchy of Prussia was created hereditary. 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 duchy of Prussia till 1632, when the king of Sweden, determined to extirpate this foe, invaded the country and expelled the ducal family. This was the origin of the duchy of Holstein over Prussia.

Sigismund 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 ordered the arrival of the cavalry, now formidable at Leopoli in 1539. According to the account of a contemporary historian (Oriechowicz), 150,000 militia, splendidly armed, assembled at the royal summons. Put 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 this mischievous excitement 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 his last years he was in a measure unpopular, owing to the massacre of his queen Bona, to whom he was devotedly attached. He was succeeded by his son Sigismund Augustus, who had been elected and crowned during his lifetime, and was only then ten years old. 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 Gustof, 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 Radzivill and other Lithuanian families an 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 primate Dziewiega 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 factional opposition, and Barbara was crowned, but she died shortly afterwards, without strong suspicion of any injury. Their daughter, married by her mother to King Bonna, was named after her grandmother.

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 arranged without the consent of the king, his major-domo was forbidden to give his assent to the marriage, the Holy Roman Empire was against it (see the Patriotic Diet of 1546), and the Diet of Brama Stare (1548) was dissolved by the king's dissolution of the diet and the Estates. But the union was not completed, and the king left his consort in Poland. A general assembly was called, which was to deliberate on the government of the kingdom, but was dissolved by the king's death.

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 dissensions among the nobility were at the time of the death of the king, and the church was divided among the crowns of Poland and Lithuania. Sigismund Augustus was wawing, and his mind seems to have been much unsettled by the conflict of religious opinions. There are, however, a few sources which indicate that he was friendly to a reform of the national church, as his favours were bestowed chiefly on the open and secret promoters of that measure. It is therefore very probable that had he lived longer, this great event would have taken place in Poland.

The interregnum produced by the death of Sigismund Augustus (1572) was dangerous to the peace of the country. The kings, Augustus II, brother of the first Augustus, and Zamoysky, were both candidates for the vacant throne. Augustus II, archduke of Austria, was elected by the German princes, and Zamoysky, by the magnates. Both candidates were proclaimed kings by the adherents; but Maximilian, being defeated and taken prisoner by Zamoysky, was obliged to resign his claim. The choice of Sigismund III was unfortunate: bigoted in his
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 Polish Catholic Church. A civil war ensued; but the insurgen-ts being defeated, the country was restored to peace. An individual named Demetrius, pretending to be the legitimate heir to the throne of Moscow, who was believed to have been murdered by Godounoff (Pozjarny), appeared on the 7th October, 1621, Sigismund, expecting that he would subject the Russian church to the supremacy of Rome, secretly favoured him; and many powerful grandees having espoused his cause, he succeeded in rallying the Muscovites. War with the Turks, long urged by Sigismon
des, was managed by the Tsar, who was murdered in a popular riot. An impostor however appeared, who pretended that he had escaped from the massacre, and created great disturbance in Muscovy, where Prince Shoyoshki was elected Czar, instead of the murdered Demetrius. Sigismund, taking advantage of the distracted state of Muscovy, declared war against that country; and the Polish general Zolkiewski, having defeated the Muscovite army and an auxiliary Swedish force, which was sent to pay his peace, Vladislav, eldest son of Sigismund, was elected Czar of Moscow, 1610, on conditions which limited the absolute power that the monarchs of that country hitherto possessed. Sigismund, with the assistance of the Poles, was forced to accept; and the heads of the future line of kings of the Poles, was conducted to Poland, where he died in captivity. Zolkiewski made the noblest use of his victory over the Muscovites. Though he entered their country as a conqueror, he restored tranquillity by placing on the throne a Muscovite prince, and as much as possible to the advantage of the Muscovites, who were anxious only to secure the interests of their church, and to the generous and sound policy of the Polish general, who foresaw the dangers which threatened his own country if a prince likely to become its king should possess despotic power in Muscovy. The inhabitants of Muscovy, willing to swear allegiance to their new king; but the accession of the Czar, Sigismund, on whom it mainly rested, would have established a constitutional government in Russia, and created a Slavonian empire, and the most powerful state in Europe, was destroyed by the jealousy and incapacity of Sigismund, who, instead of confirming those conditions, delayed his confirmation under various pretences, and in the mean time endeavoured to possess himself of some towns and provinces of Russia. The Muscovites, justly irritated, on the 7th October, 1620, war ensued, during which the Polish general, ill-supported by the king, maintained himself for a long time against the Muscovites, but was finally obliged to retire. The refusal of the diet to grant the necessary supplies produced insurrection in the country, and the Polish generals gained great advantages. Sigismund at last made an effort, and sent his son Vladislav to recover, at the head of an army, the throne which was lost through his father's imprudence, and already occupied, by Michael Fedorovich Romanov, who was elected in 1613. Vladislav penetrated to the walls of the capital; and after an unsuccessful attempt to carry it by storm, occupied a strong position in its vicinity; but the insubordination of the troops, so ill-begotten by the political measures of the king, hastened the conclusion of a truce of fourteen years, by which the Czar Michael Fedorovich was recognised by Poland, which retained Smolensk with certain privileges. This was followed by an account of the increasing hostilities with Turkey, which originated chiefly in the disputed possession of Moldavia, where many powerful Polish generals, related to Mohilla, prince of that country, espoused his part against the Turks, who had deposed him from his dignity. The constant irruptions of the Tartars into the Polish territory, and the depredations of the Cossacks, subjects of Poland, committed in the Turkish dominions on the Black Sea, rendered the preservation of peace very difficult; but war was rendered inevitable by the sending a considerable force to Hungary against Bethem Gabor, prince of Transylvania, who, with the Bohemian insurgents, was besieging Vienna. This produced a diversion of the Sultan's forces from the war against Sweden, thus creating the necessity of a quarrel with Turkey. Zolkiewski, whose expedition against Moscow we have mentioned, having encountered the Turks with a very inferior force, was defeated and killed in 1620. The Tartars ravaged many provinces; and Sultan Osman marched at the head of an army which is said to have amounted, including the Tartars, to 400,000 men, with the view of conquering all Poland, which seems to have been that overwhelming force only 35,000 Poles and 40,000 Zaporogian Cossacks, under the command of Chokloficki 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 27th October, 1621, on condition that nothing should remain in the same state as before the war. In the mean time the Swedes took Riga and many other towns in Livonia, but a truce restored a part of their conquests. War with the Turks continued; and, 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 deceptive promise of assistance from Spain, rejected those offers, and was obliged to conclude, in 1622, 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 forty years was an uninterrupted 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 political results of his administration were unfavourable to his state. Bigoted in his attachment to 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 almost entirely destroyed by his efforts; and he effected it 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 revolution 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 youth of nineteen years, and immediately after his coronation he marched 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 to Poland. Samborowitch, the Czar of Moldavia, 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 Vmislav, who died in 1648, at the very moment when a most dangerous rebellion was breaking out.

Although Vmislav was strongly opposed to religious intolerance, his royal policy 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 Vmislav, and raged for many years under his brother and successor John Casimir, until Czemielski, 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 extremely critical. The Czar of Sweden, perceiving the imprudence of the king made it desperate. Charles Gustavus having ascended the throne of Sweden in consequence of Christina's abdication, John Casimir's ambassador at Stockholm made a protest against his accession to the throne of Poland, and accused the king of his uncle's death.

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 1655, 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 had already seized Lut机动, a great number of the inhabitants, menaced 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 pass the winter, jealous of the Swedish 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, and invaded Poland and invaded Poland, and the Poles, without the assistance of the electors of Brandenburg, were defeated by the forces of the electors of Brandenburg. But these invaders were either destroyed or expelled by the nation, which had unanimously risen against its enemies. The defeats of the country were principally accomplished by Stephen Czarniecki, one of the bravest and most skillful 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 Sweden, and Augsburg 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 Moscow, with which hostilities had been renewed in 1658, for the Cossacks of the Ukraine, having perceived that the czar of Moscow was a more dangerous protector than their legitimate monarch the king of Poland, returned to their duty on receiving ample guarantee for their religious and political liberties. The hostilities were deferred for ten years, and expelled from the country, and their own frontiers were invaded.

This war, which terminated in 1665, destroyed the advance of Moscow, with which peace was concluded in 1667, at Andrusov, by which Smolensk and a great part of the Ukraine were left in the hands of the Cossacks. Both parties were anxious to conclude the peace, being menaced by the Turks, whose aid was called in by Doroshenko, a Cossack chieftain, who intended to withdraw 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 retired to England, where he died at St. Germains, 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 cardinal by Pope Innocent, with ecclesiastical vows on the death of his brother Vladislav, whose widow he married. His reign was one of the most unfortunate periods of Polish history, and the consequences were highly deplorable. Poland lost Smolensk, and a part of the Ukraine, and the important districts were also ceded to the elector of Brandenburg, whose independence of Poland was further recognised by the treaty of Vela, 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 minority, jealous of their rights, refused to acknowledge any of them, and proclaimed the king Michael Prince Wsinsowski, a young man who had no pretensions to this dignity. The partisans of the other candidates were carried away by the tumult, and compelled to accept a crown, the burden of which he was not qualified to support. His reign was disturbed by the factional opposition of the praetors, who wished to dethrone him. The government was assisted by magnificent grandees, who nearly produced a civil war. The Tsar of Moscow, with an immense army, and the heroic 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 tsar 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. Michael had no legitimate heir, and John Sobieski, who had obtained a brilliant victory over those enemies on the day after the death of Michael, was elected in his stead, notwithstanding the competition of numerous candidates.

Philosophers 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 their respective articles. [Saxony.] The reign of Augustus II., although unequal in the consequences 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 eventful consequences. Augustus, who owed his elevation to Russia, fell, chiefly through the instrumentality of his favourite minister, Count Bruhl, 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 considered as the main object of its policy to put an end to the power of the Jesuits, had so benighted 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 continued until the war of the Polish and Austrian succession, in which the rule of abroad induced the court of Warsaw to reform 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 Radziwills, wished to maintain all the privileges of their order, and were strongly attached to the Saxony dynasty, which was favourable to their opinions. The Saxon or court party was opposed by the Czartoryski, who, perceiving that a liberty which was permitted to St. Petersburg 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 they justly thought, was the basis from the humiliating position into which they had fallen through her feeble government. For the attainment of that object they had to struggle against the prejudices of the nation and the Czartoryski, who had not only founded their dynasty, but had been raised to a certain degree of consideration by little note, and raised others which had been reduced in adverse circumstances. They also sought out and p-
tronsid 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 this 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 by this means the Russian government in Russia might be induced to adopt measures 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 recognised a national constitution for Poland; and to this purpose promised the Czartoryskis 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 Czartoryskis might have been successful; but the accession of Catherine II. entirely changed the state of affairs. The projects of the Czartoryskis, 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 Czartoryskis, 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 was modified. The election of a single member was considerably limited, the executive authority of the crown strengthened, and the excessive privileges of the nobles were restricted. Their project of abolishing the office of foreign ambassador, and the proposition of electing the king by deputies chosen for that purpose was also defeated. The same diet declared that the constitution continued to exist, and that its dissolution by the king was not dissolved by the act. Thus the Czartoryskis accomplished, although by violent and illegal means, a most salutary revolution. The same preponderance which brought about these reforms, effected the election of Poniatowski in 1764, and the diet of that year restored, with some few exceptions, the ancient force 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 1774, a new partition was made. The Poles and Russians, accepting the Antichristian confessions to equal rights, passed several others of a different character, which tended to weaken the government, and the acceptance of a Russian guarantee deed became a matter of necessity.

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. It 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 forced to make a treaty with it, 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 comprehended its best provinces, and were unequally divided between Russia, Prussia, and Austria. The spoliating parties called a diet to sanction this iniquitous transaction, and imposed on the country a permanent council, which deprived the king Poniatowski over the five years of all the services and revenues of the nation, which now strove to compensate its heavy loss by internal improvements. An excellent system of public education was introduced, and literature was encouraged; industry was re-animated, and every kind of improvement rapidly advanced. The nation was thereby enlivened, and ennobished individuals and of the king himself, who earnestly strove to ameliorate the condition of the country. The chancellor, Andrew Zamoyski, an enlightened and patriotic nobleman, prepared a new code, which removed many an-
ments under which they fell. 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 made in their lives, but there 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 even introduced some foreign roads, but it exhausted 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 mistaken improvements, the introduction of a new 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 Castrorzycki, 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 antient 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 armies 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 as a force with national rapidity, 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 Prussia in 1795-9 was erected into a sovereign state under the name 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 government was established, organized the church, and the sovereignly 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 disproportionate 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 Polish forces were obliged to evacuate after an unequal combat, but having entered Austrian Poland, their numbers were rapidly 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, increased the area of the duchy from 1,15 to 3,780,000 inhabitants. The treaty of Vienna arrested the career of the Polish forces, and only a part of Austrian Poland was united with the duchy of Warsaw. The campaign of 1812 was not gain, but a loss; they paid for the victory, 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 delegation 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, part of which was in the occupation of the Russians, whilst the Polish army marched with the French to Moscow.

At the congress of Vienna in 1815, the plenipotentiaries of Great Britain and France, Castlereagh and Talleyrand, were in favour of the restoration of Poland, to which Austria was not averse. But the landing of Napoleon from Elba created interests of a more pressing nature, and the affairs of Poland were arranged in the following manner: A part of the territory of Warsaw, containing 2,000,000 inhabitants, was given to Prussia under the title of the duchy of Posen. The salt-mines of Vieiluck and some districts were given to Austria. Cracow with a territory of 400 square miles, and about 900,000 inhabitants, was erected into a republic; and the remainder was entitled 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 form of them were nominated by the king and confirmed by the diet. The two chambers decided on the bills 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 Poland at the congress of Vienna, as a balance to the retrocession of territory, in formable 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 and possessed his whole territory at one time against the anomaly. 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 generally 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 of Russian Poland. The visit of the ambassadors of 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 situation was not without effect on the policy of Russia, which was organised by Prince Adam Castorzycki in a manner favourable to the conservation of the national language and literature. The Russian senator Novosiloff, to whom the Russian Polish provinces 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 banished, and the spirit of the agitation was put down by force. But the young Russians, who were approved against them, were sent to distant provinces of Russia and forced to enter into the civil service. Many boys, irritated by this system of oppression, had manifested their feelings in violent language at their secret meetings, in which they meditated some childish schemes of resistance; but instead of being visited with the usual school correction, they were sent to serve as common soldiers, and some were condemned to the mines of Siberia. Similar persecution of the students took place at Warsaw, and the system of instruction was continually rendered less efficacious by substituting absurd modes of teaching for sound methods, and by limiting the subjects of instruction. A severe censorship was also introduced. But the spirit of the whole of Russia was raised by the introduction of the principles of the French revolution, the spread of the spirit of freedom, and the publication of works of liberal principles, but even the introduction of similar works from abroad.

These causes produced their natural result. Conspiracies began in Moscow to disrupt the country, to alleviate the severity of the oppression, and the country was infected with spies in the pay of Russia. This only served to irritate the nation. An extensive conspiracy, chiefly among the army and the students, was ready to attempt the overthrow of the Russian government in 1829, when that power was engaged in a war with Turkey, and it was only prevented by some more cautious or timid individuals. The French revolution of July, 1830, which produced a general excitement in the different parts of Europe, was not without influence in Poland; an insurrection was meditated, and the time was fixed for the spring of 1831. This insurrection would perhaps have never taken place—as the foreign policy of France soon became anti-revolutionary—the government, having discovered some traces of conspiracy, had not begun to arrest many of the members, a circumstance which forced them to accelerate the time of the insurrection. In the evening of the 25th of November, 1830, the insurrection was effectuated by the military school, composed of about 200 young men, who were joined by many students of the university and a few thousands of Polish troops stationed at Warsaw. The Russian troops, which had made some ineffectual attempt to stop the insurrection, took possession of the town, under the grand-duke Constantine, with whom two regiments of Polish guards remained. Although a few obnoxious individuals were massacred during the insurrection, which they attempted to prevent, it was not subdued by
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 Chłopiński, a veteran general of high military reputation, was named to assist General Dwernicki. He arrived in Warsaw on the 13th of February, and 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 in the position of grand-duke. The soldiers escaped in great numbers, and the provisional government, a fact which shows that the Polish army in low numbers, though disheartened, did not break its oath of allegiance to the emperor of Russia as king of Poland, even in combatting against his armies.

The provisional government made an agreement with the grand-duke, which he was allowed to retain of 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. Chłopiński proclaimed himself dictator, a measure which was deeply approved, as tending to prevent disorder, and as giving security to the national government; but this extraordinary authority was employed by him only in fruitless negotiations with the Russian emperor. Had he immediately marched on Lithuania, the Russian army would have been overcome, and if the government, as a matter of policy, 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. Chłopiński, after hasty negotiation with the government, resigned the dictatorship, and was with great difficulty prevailed upon to promise his assistance to Prince Radziwill, who was nominated commander of the army which was now to oppose the Russians. The diet assembled at Warsaw, having received the assurance of the emperor, declared, on the 25th of January, 1831, the throne vacant; organised a national government under the presidency of Prince Adam Czartoryski, and resolved on a vigorous defence. This defence appeared hopeless, as the Poles had only 50,000 men and 136 cannon, besides 14,000 men in the fortresses of Zamość and Modlin, and dispersed in several parts of the country; while the Russians crossed the frontier with 136 cannon. The Poles were completely hemmed in by the timely approach of the Russians at Warsaw, whither the Poles were retreating in order to fight under the walls of that city in a position which gave to their small forces a chance of resisting the overwhelming numbers of the enemy. The first combats were favourable to the Poles, though they could not hold them in the suburbs. Warsaw, suddenly attacked and defeated a superior Russian force, with scarcely any loss to itself, several battles took place from the 12th to the 19th of February. An indecisive though murderous battle was fought on the 20th. On the 23rd the Russian field-marshal Diebich concentrated his forces, which were increased by the arrival of fresh resources to 220,000 men and 400 cannon; and he made an effort to crush the whole country about 60,000 men and 100 cannon. A bloody battle ensued, in which the Poles, notwithstanding the inferiority of their force, would have obtained a victory, if some unfortunate circumstances, as well as some faults of the general, had not prevented them from taking advantage of several favourable moments. The Poles lost, from the beginning of the campaign, 11,000 men in killed and wounded; the loss of the Russians is estimated at about 30,000. The Poles retired beyond the Vistula, which separated them from the Crimea, and seldom attempted to defend Warsaw. The Poles, partisan or small bodies under General Dwernicki, remained inactive, chiefly on account of the difficulty of passing the river at that season. The Polish general-in-chief Skrzynecki, who had recently returned from the Crimea, on the 25th of February, employed this time in recruiting his forces; but on the 31st of March, when the Russians were making preparations for crossing the Vistula above Warsaw, the Russian army, on the 31st of March, when the Poles were being attacked and defeated the enemy, of whom 14,000 were taken prisoners. The Russians also lost 10 cannon, and about 4000 in killed. The loss of the Polish troops was inconsiderable. This advantage was however not followed up as it ought to have been. Meanwhile an insurrection broke out in Lithuania as well as in Volhynia and Podolia. Government forces were sufficient to assist the Polish troops in Volhynia, but he was compelled by an overwhelming Russian force to retire into Austrian Poland, where his corps was disarmed and himself kept prisoner; but many officers and men were captured by the Polish army. The Polish commander-in-chief committed many mistakes, particularly by his unwillingness to strike a decisive blow from a delusive hope that European diplomacy would interfere and settle the question of Poland. After having lost an excellent opportunity of capturing or capitulating the army of the king of Poland, he was surprised, and obliged to give battle under very unfavourable circumstances, at Ostrolenka, on the 26th May. The Polish army, much inferior in numbers and in artillery to the Russians, fought in a most disadvantageous position, and was only saved from total defeat by their extraordinary courage and the energy of the commander. The consequences of this battle were deplorable; the troops sustained an enormous loss, particularly of officers; some regiments, which were cut off by the Russians from a communication with the Polish army, were unable to rejoin it, and were obliged to march into Lithuania in order to join the insurgents there, to whom some small assistance was already given; and the effect on the nation's heart was immense. The 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 liberty had they not been put under the command of General Giegiul, their commander. A great part was obliged to enter the Prussian territory, where they were disarmed and kept as prisoners; and another part, under General Dembinski, returned to Warsaw, 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 Czarnów. The want of ammunition and of every kind of resources was constantly more felt. 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 Diebich, 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 embarked a considerable body of troops on the Prussian side of the river. He crossed the river, where his magazines were in perfect safety, and where 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 was able to cross the Oder. Paskevich, 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 13th of August, during which the prisons were forced, and 35 individuals, who were only spies of the Russian government, and some traitors, together with a few innocent persons, were murdered.

The government, feeling its weakness, resigned its authority, and General Krukowski, who is considered to have fomented 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 detached to collect provisions in the provinces on the right bank of the Vistula, and only 30,000 men were left to defend Warsaw. These were not sufficient for them to cross the Oder, and Paskevich, who had commanded the force 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 Poles, followed by thousands of fugitives, and allying persons, retired on the right bank of the Vistula, and 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 en 1831, by M. Brzoowski, the best work which has hitherto been published on this subject.

Thus ended 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 false and malignant reports by the side of the Czar. The consequences were deplorable to Poland, and cannot be considered as fortunate to Russia. The emperor Nicholas, instead of adopting a system of clemency, as was generally expected, exercised the utmost severity against the Poles, and double indemnity was condoned 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 one, called temporary, was put into force without the concurrence of the Diet. 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 national character of Poland, and a great number of Poles were banished 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 primate, who, on the 3rd and 24th of Interregnum, 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 commons, deliberated together, and could not be dissolved by the liberum veto, and it was on that account also called the general confederation. It issued all the orders necessary for the maintenance of the public tranquility and safety, and fixed the day for the election of the new king. Several other orders of justice were also 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 primate 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, and the president of the chamber was chosen in the nuncios. The primate then gave his blessing to the senators and nuncios, who joined the nobles of their respective palatines, who were all on horseback, under the colours of their respective palatines. The diet appointed the candidates to the nobles of their palatine or province, and they all voted equally; they collected the votes, and made a report of the result to the marshal of the diet. The primate, mounted on horseback, rode about to the assembled nobles, inquiring from them whether they consented to the election of the successful candidate. The new king was then proclaimed by the grand-marshal of Poland; and either himself or by his plenipotentiary aware to the pacta conventa, or to the diet. The Diet then separated.

The diet of coronation assembled at Cracow to witness that solemnity, which terminated the interregnum. The deputies of the towns of Cracow, Warsaw, Vilna, Posen, Danzig, Thorn, and Culm were admitted to the diets of convocation, election, and coronation.

The ordinary diets took place every two years; but in case of necessity, extraordinary diets could be convened. Each diet was preceded by elections, made by royal letters-patent, which contained propositions for the future diet. The nobles or electors assembled for the election in meetings called in Polish Szymiski, that is, little diets (in Latin, Comititia); they returned the members, and gave them indulgence in respect to their peerage, as well as other subjects, which the members were obliged to follow, unless they were empowered to act according to their own views.

The primate and the chamber of nuncios, having assembled at the appointed day in the cathedral church of Warsaw, proceeded, after divine service, with the king to the hall of the senate. Several formalities were observed expressive of their respect to each other. Then the nuncio, who did not advance personally, and the congratulatory address of the chambers was answered by the chancellor, who also read the propositions from the throne, which were only a repetition of what had previously been submitted to the majority of electors. The diet assembled under the presidency of the marshal or speaker of the last diet, and began their deliberations by electing a new marshal.

Both chambers formed a secret committee to hear the report of the measures of the government since the last diet. The pacta conventa were read, and each nuncio had a right to make his observations, if he thought that any of their provisions had not been observed. The chambers, having approved the measures, appointed committees to examine the reports of the different departments of government.

The propositions of the king, as well as the motions of the nuncios, were publicly debated. A bill could not be carried except by the unanimous voice of the chambers. The bill was read by the secretary of the diet, and the marshal inquired three times whether any member opposed it: if there was no opposition, the bill became a law, and was called constitutio. It was afterwards read in the united chamber, with recitation of the name and the number of the nuncios. The nuncios were obliged to render an official account to their constituents of their parliamentary conduct, for which meetings were convened.

The king sat in the senate, which acted as a judicial tribunal, at the time when the chamber of nuncios deliberated about the propositions of the king. The senate formed a council of state, and without their consent no royal proposition could be made; consequently a proposition of the king required the approval of the senate, 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 same chamber, was submitted 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. Forty-nine of the senators always voted with the king; then twenty-eight senators, and the whole 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 consult. The senators were appointed by the king for life, unless some lower rank to a higher, as for instance from a castellan to a pala- tine. The bishops were also nominated by the king. The senate was composed of two archbishops, fifteen bishops, of the dioceses of Cracow, Lwow, Gnesen, and Trakai, and of eighty-four nobles, who were appointed by the king,

The senate was composed of two archbishops, fifteen bishops, and eighty-four nobles, who were appointed by the king for life, unless some lower rank to a higher, as for instance from a castellan to a pala- tine. The bishops were also nominated by the king. The senate was composed of two archbishops, fifteen bishops, and eighty-four nobles, who were appointed by the king for life, unless some lower rank to a higher, as for instance from a castellan to a pala- tine. The bishops were also nominated by the king. The senate was composed of two archbishops, fifteen bishops, and eighty-four nobles, who were appointed by the king for life, unless some lower rank to a higher, as for instance from a castellan to a pala- tine. The bishops were also nominated by the king. The senate was composed of two archbishops, fifteen bishops, and eighty-four nobles, who were appointed by the king for life, unless some lower rank to a higher, as for instance from a castellan to a pala- tine. The bishops were also nominated by the king. The senate was composed of two archbishops, fifteen bishops, and eighty-four nobles, who were appointed by the king for life, unless some lower rank to a higher, as for instance from a castellan to a pala- tine. The bishops were also nominated by the king. The senate was composed of two archbishops, fifteen bishops, and eighty-four nobles, who were appointed by the king for life, unless some lower rank to a higher, as for instance from a castellan to a pala- tine. The bishops were also nominated by the king. The senate was composed of two archbishops, fifteen bishops, and eighty-four nobles, who were appointed by the king for life, unless some lower rank to a higher, as for instance from a castellan to a pala- tine. The bishops were also nominated by the king. The senate was composed of two archbishops, fifteen bishops, and eighty-four nobles, who were appointed by the king for life, unless some lower rank to a higher, as for instance from a castellan to a pala-
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 noble paid a fine of 10 florins on the Horst of Ruzenkie, or arrière ban, with a certain number of followers, determined on the occasion by the king and his council, and proportionate to the extent of his land. The king declared to the object that the king in his person was obliged to do the same. A noble who was condemned to imprisonment, was released from his prison during the campaign, but returned to it for the remainder of his term of imprisonment. A noble who did not appear at the time and place determined by the king's council was considered to have fled, and to lose his honours. In general the martial law which was in force during a campaign was extremely severe. The palatines commanded the arrière bans of their palatines or free towns in which they lived, and the free towns in the districts. There were in each district several permanent officers, who were employed on such occasions.

The king was the head of the state, and had the supreme executive power. He also constituted an estate in the legislative body, which was composed of the king, the senate, and the chamber of nuncios. All judicial and public proceedings were in his name. He had the power of pardon, and the nomination to all dignities and offices, ecclesiastical and secular, and the appointment of those who were elective; he granted the starostes, or crown estates. Without the consent of the diet, he could not make laws, impose taxes, declare war, conclude peace, or form a treaty, contract a matrimonial alliance, or leave the country.

The diet of 1775, a continuation of which same which confirmed the first dismembrment of Poland, took away the little authority which the king possessed, by establishing a permanent council of 36 members, consisting of 3 bishops, 11 temporal senators, 4 ministers of state, and 18 nuncios. The king, who was the president of this body, could do nothing without the assent of the diet, which was determined by a majority of votes. The ministers of state were 2 grand marshals, 2 court marshals, 2 chancellors and 2 vice-chancellors, and 2 treasurers. They were all appointed by the king, who could not dismiss them, as their places were for life, unless they were advanced to a higher rank or resigned voluntarily. The ministers might also be senators. Of all these dignities, one was for Poland and one for Lithuania. The grand marshal was the governor of the royal court, and the first officer of state. He convoked the diets by the order of the king, and during the interregnum by that of the privy. He maintained the public peace during the diets, received foreign ambassadors, proclaimed the laws, and had the power of arresting any capricious citizen. It was also his office to preside over public ceremonies, and to maintain the peace in the royal residence. In public solemnities he preceded the king, with a staff, the badge of his dignity. During the absence of the king, all those officers were required to sit in the court-martial. When the king resided in Lithuania, the officers of that duty discharged the same duties.

The chancellor and vice-chancellor differed only in name and precedence; their authority was the same. They gave a legal sanction to the documents issued by the king, by affixing the seals to them. They were also judges in several cases, civil and ecclesiastical, and one of them was always a clergyman. The treasurer presided over the financial departments, and they 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 independent 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, cupbearers, 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 subordinate to the last-mentioned officers. They were established in those times when the kings in their journeys about the country lived at the expense of the inhabitants, and were served by those local court officers. The starostas (capitanes) were of the same kind. Those with imperial estates, who were set over castles and towns, and presided in local courts for criminal and police affairs; and starostas without jurisdiction, who were only holders of starosties, or crown estates, which were granted them on payment of a small annuity.

The confederation, associated for the nobles for the defence of their rights. It was generally formed by a few individuals, who met together, and after having composed the act of confederation, which expressed the object that they by forming that association, they issued circulars, by which they compelled all the nobles to join their confederation, elected a marshal or chief, castle counsellors, or members of the government which they pretended to have a right to exercise, and really did exercise, when their state property was sacrificed to selfish purposes, and to lose his honours. In general the martial law which was in force during a campaign was extremely severe. The palatines commanded the arrière bans of their palatines or free towns in which they lived, and the free towns in the districts. There were in each district several permanent officers, who were employed on such occasions.

The king was the head of the state, and had the supreme executive power. He also constituted an estate in the legislative body, which was composed of the king, the senate, and the chamber of nuncios. All judicial and public proceedings were in his name. He had the power of pardon, and the nomination to all dignities and offices, ecclesiastical and secular, and the appointment of those who were elective; he granted the starostes, or crown estates. Without the consent of the diet, he could not make laws, impose taxes, declare war, conclude peace, or form a treaty, contract a matrimonial alliance, or leave the country.

The diet of 1775, a continuation of which same which confirmed the first dismembrment of Poland, took away the little authority which the king possessed, by establishing a permanent council of 36 members, consisting of 3 bishops, 11 temporal senators, 4 ministers of state, and 18 nuncios. The king, who was the president of this body, could do nothing without the assent of the diet, which was determined by a majority of votes. The ministers of state were 2 grand marshals, 2 court marshals, 2 chancellors and 2 vice-chancellors, and 2 treasurers. They were all appointed by the king, who could not dismiss them, as their places were for life, unless they were advanced to a higher rank or resigned voluntarily. The ministers might also be senators. Of all these dignities, one was for Poland and one for Lithuania. The grand marshal was the governor of the royal court, and the first officer of state. He convoked the diets by the order of the king, and during the interregnum by that of the privy. He maintained the public peace during the diets, received foreign ambassadors, proclaimed the laws, and had the power of arresting any capricious citizen. It was also his office to preside over public ceremonies, and to maintain the peace in the royal residence. In public solemnities he preceded the king, with a staff, the badge of his dignity. During the absence of the king, all those officers were required to sit in the court-martial. When the king resided in Lithuania, the officers of that duty discharged the same duties.

The chancellor and vice-chancellor differed only in name and precedence; their authority was the same. They gave a legal sanction to the documents issued by the king, by affixing the seals to them. They were also judges in several cases, civil and ecclesiastical, and one of them was always a clergyman. The treasurer presided over the financial departments, and they 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 independent 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, cupbearers, 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 subordinate to the last-mentioned officers. They were established in those times when the kings in their journeys about the country lived at the expense of the inhabitants, and were served by those local court officers. The starostas (capitanes) were of the same kind. Those with imperial estates, who were set over castles and towns, and presided in local courts for
POLAND—Language and Literature. [SLOVANIAN LANGUAGE AND LITERATURE.]

POLAND. [BEAR.]

POLAR SEAS is a term generally used to indicate those parts of the globe 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 navigators and explorers who venture into this extremity of the world are often opposed by the most adventurous seamen. But the experience of 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 and care and precaution with 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 their reasoning 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. This theory was thus raised; but on the contrary, it was decided by 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 encircle the poles, but he did not fall in with an even 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. This 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, where it was supposed that none existed, opposite the southern extremity of America, and are 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 sea between the north continental divisions of Europe and America, and those of Asia. 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 constitutes the continental-term of the North Polar Sea. This sea is united to 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, is 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, is 76° N. lat., and 731 miles from the coast of Norway, between 69° and 78° N. lat., or not quite 300 miles more than the town of Halifax in Nova Scotia from Valenta in Ireland.

That part of the Arctic Polar Sea where it 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, but here at the east 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 Gulf, are the immense islands of Greenland, with whose outline we are imperfectly acquainted, and whose number, according to the latest discoveries, has been increased by two new islands. The most southern of these islands approach so near the northern coast of America, as to leave a strait (Strait of Hans) only compassed by the depots of that province took part in the deliberations of the Polish diet in cases where their province was concerned. The bishops, palatines, and castellans of that province belonged to.

The southern part of the Arctic Polar Sea contains the Beringstrait (Strait of Bering), which extends between the continent and an island, to which no name was given by the discoverers, because they supposed it to constitute the southern coast of an island which Captain Bering (1683) had supposed to exist. The 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, its breadth from 5 to 10 miles, which is likewise nameless, and may be called Simpson Strait, in honour of the companion of Mr. Dease. It separates the island called Victoria Land from the northern coast of America, and was discovered in 1838 by Dease and Simpson. The most western of these straits, called Dolfin and Unión Strait, divides from the American continent the island or islands called Wollaston Land, which were discovered in 1836 by Dr. Richardson. West of this strait, on the west coast of Asia, the sea is as yet unknown, no island discovered west of Asia, which is entitled to the name of America. If a line is drawn from the western extremity of the Dolfin and Unión Strait (117° W. long.) through the pole, and continued towards the south, it cuts 63° E. long. near the island of Novaya Zemlia, the most southern of the Island of Novaya Zemlia. This line, which divides the Arctic 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, by the Strait of 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 floating masses constituting the extreme coast 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 coast into the ocean is the principal region of navigation, and is much more open to navigators. Between Spitzbergen and Greenland vessels have advanced as far as 81° N. lat. British whalers almost every year sail up to the most northern extremity of Baffin's Bay (77° N. lat.), and Parry in his first voyage succeeded in penetrating as far as 117° W. long., but here he met an impenetrable barrier of ice. On the other side, the Russian navigator Zolwa, who surveyed the island of Novaya Zemlia in 1836, and joined it with the island of Elsinor, 100 miles north of it, near the coast of Norway, and 30 miles from the mouth of the river, and is about 60 miles east of the island of Novaya Zemlia, 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 this part of the globe is a sufficient reason for this Phenomenon; but one of 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 coast 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 south of 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 certain mathematical axes in some particular direction; frequently also it denotes in a body the existence, either naturally or induced, of two points possessing contrary properties. If iron filings be strewn over a mass of natural lodestone, it will be found that there are two points on its surface at which the filings are most abundantly attracted, and where they dispose themselves nearly in the direction of a line through those points. This is the so-called imaginary lodestone of the crystal. Then, if the lodestone be cut in the form of a sphere, having this line for a diameter, the symmetrical arrang-
ment of the iron-slings with respect to this line affords an indication that the particles of the loadstone may be symmetrically disposed about the line; and, from an analogy with the axis and poles of the earth, this line is called the axis of the loadstone, and its extremities are called the poles. The formation is accounted for by a form of the prism, the length of the latter being in the direction of the axis, and if the prism be suspended by its centre of gravity, it will be found to take one particular direction with respect to the horizon and the meridian of the observer. The two extremities formed have received the denomination of poles, and the term is now applied to the opposite extremities of any body or molecule, when it assumes or can be brought into a particular direction.

Clausius has been the first to give the extremities of a prism formed of the natural loadstone, is true of a magnetised bar of steel [Magnetic], and the poles or opposite extremities of either material are found to possess a contrary character. One extremity always tends towards the northern part of the horizon only, and the other towards the southern part; and if two such prisms or bars are formed, and suspended by their centres of gravity, on bringing the northern or southern pole of one near the like pole of the other, they mutually repel each other. But if one pole of one be brought near the opposite pole of the other, they mutually attract each other.

A piece of natural loadstone, if it could be renewed by the magnetic action of the earth, would probably exhibit no signs of that attractive and directive power which we observe in it, the magnetic fluid, or whatever be the cause of the former, being then in equilibrium. Since the power by which the loadstone possesses the negative power in the earth by some means disturbs that equilibrium, forcing the fluid molecules which possess opposite properties, or are in contrary states, towards the opposite extremities of the mass. In magnetising a steel bar it is probable that the natural magnetism is decomposed in a similar manner. Since in magnetised bars the poles of contrary names attract each other, and that the earth may be considered as a body possessing boreal magnetism towards the south pole, and vice versa, it is evident that the magnetism which exists in the northern extremity or pole of a suspended bar (as a compass needle) must be austral, and that which exists in the southern extremity must be boreal.

If a cylinder of wood or metal be insulated on a glass stand, and it be brought near to a body which has been electrified by the usual machine, it will be rendered polar; that is, one end will possess the vitreous or positive electric fluid, and the other the resinous or negative electricity, and near the middle the cylinder will be in a neutral state. These conditions may be rendered evident on electrifying a pith ball, insulated by means of a silk thread, and presenting it to a cylinder, when it will be attracted towards one end, and repelled from the other. It appears, from the effect of the cylinder on the electrified ball, that the fluid is of the same kind repel each other, and those of unlike kinds attract each other.

Polarity is also obtained by what is called galvanism, which indeed differs from electricity only in the manner in which a change in the electrical condition of a body is produced; in the latter case friction is employed for this purpose, but in the former it results from the contact of metals susceptible of different degrees of oxidizability. In an ordinary battery, the fluid, by chemical action on the zinc, produces a separation of the two kinds of electricity; that which is called positive, and the other is called negative electricity, and the latter communicates it to the zinc plate with which it is connected. This action is repeated at every pair of plates in the battery; and from the last zinc plate the electricity enters the conducting wire, or that which is intended to connect the opposite extremities of the battery; thus the zinc extremity constitutes the positive pole of the battery.

At the same time an opposing current of negative electricity passes from the copper, through the fluid, to the zinc, from the zinc to the copper plate, and from the copper plate, which is in connection with the conducting wire, and this extremity of the battery; this copper end is called the negative pole of the battery.

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 magnet, it will settle between those opposite forces, in the direction of a tangent to some curve 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 1

and be represented by PB; also let the repulsion exercised by S on P be expressed by 1

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; and therefore, be the direction of the needle end of a tangent to the curve at any of the points PQ, then by trigonometry, cos θ = the value of the angle θ.

\( \angle QPB = \theta \), then fall CD perpendicularly on PQ: then by trigonometry, \( \cos \theta = \) the value
of PD, or the equivalent of the force represented by $PC$ when reduced to the direction $PQ$; and $\frac{\cos \theta'}{PN}$ is the value of QD, or of the force $PB$ ($= QC$) when reduced to the same direction. The sum of these, or $\frac{PS}{PN} + \frac{QN}{PN}$, is the value of PQ, and represents the whole force of the magnet on the point $P$ in the direction of the line $PQ$: hence, 

$$PQ = \frac{PS}{PN} + \frac{QN}{PN}.$$ 

But, by geometry, $PQ^2 = PC^2 - QC^2 + PQ, QC$, which, by substitution becomes

$$PQ^2 = \frac{PS}{PN} - \frac{PS}{PN} + \frac{QN}{PN} + \frac{QN}{PN}.$$ 

Equating these values of $PQ$ and leaving out terms which destroy each other, we have

$$1 = \frac{\cos \theta'}{PS} - \frac{\sin \theta}{PS} = \frac{\sin \theta'}{PS} = \frac{\sin \theta}{PS}.$$ 

Now, produce $QP$ till it meets NS, produced, if necessary, in $\tau$, and draw $SA$ parallel to $NF$: then, by trigonometry,

$$SA : PS :: \sin APS : \sin PAS :: \sin QPS : \sin QPN,$$

that is,

$$SA : PS :: \sin \theta'' : \sin \theta''' = hence SA : PS : PS : \sin \theta''' = SA : PS : PS : PN^3,$$

which being compounded with the identical proportion $PS : PN : PN$ gives $SA : PN : PS : PN^3$. 

But $SA$ being equal to $PS$, $SA : PN : PN : PN^3$; therefore $ST : NT :: PS : PN^2$.

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, or $NS$: then, if the poles are similar, the curves will be divergent, as $NPSP''$.

An analogy has long been known to exist between electricity, galvanism, and magnetism, in respect of the position of imparting polarity to bodies and the various effects produced by each other's actions. Coulomb found, in 1802, that needles of gold, silver, copper, lead, and even wood, when about one-third of an inch long and one-fifteenth 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 the agency of the battery; and gold, silver, and copper 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 magnetized.

A small piece of steel-wire may be magnetized, 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 magnetize needles was to twist a wire spirally about a cylinder, and to place the needle in a tube long 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, above 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 positive 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 pole nearest 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 on 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 pole of the needle which is nearest to the negative pole of the battery, 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 the current passing along the conducting wire of 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. If we thus reverse our action upon the particles in the needle, or upon the electric currents supposed to circulate about them, producing changes in the positions of these particles, and thus turning the needle from its place. It was a discovery of Biot, that if a perpendicular wire were let fall from any point into a magnetised needle to the conducting wire of a battery, the elastic force acting on that point is perpendicular to the line and to the axis of the wire; and that, if magnetic particles in the needle were free to move unimpeded, the impulses communicated to them by the electrical currents about the wire, is supposed that these particles would arrange themselves so as to place their axes in planes coincident with those of the electric currents, and at right angles to the lines let fall from the poles unipolarly on that axis. Such were found by Mr. Barlow to be the dispositions assumed by very small magnetised needles when placed in any positions near the conducting wire; the effects of which on magnetism have been realized by means of magnets properly placed for the purpose.

Polarization of light is the effect of an attraction exercised by the particles of what are called doubly refracting crystals, or of certain reflecting the particles of light when these pass through the former, or are incident upon the latter at a particular angle. By those attractions the particles of light, considered as not perfectly spherical, are supposed to suffer such changes of disposition that the direction of the force which passes parallel to one another, or are directed towards the same part of space. This supposition may be admitted, if we consider the particles of light to be transmitted in rectilinear directions from a luminous body; but if we adopt the undulatory hypothesis, a different explanation must be given. In this case, understanding that the vibrations of the ethereal particles in waves of common light may take place in any manner (suppose in the direction in which the waves advance) the particles of light being medium of the vibrations, it is evident that the vibrations are parallel to one another, or are directed towards the same part of space; and in consequence of their particular dispositions, that the vibrations of the particles of light in the direction of the wave's motion vanishing, the resulting vibrations shall take place in a plane perpendicular to that direction, and in lines parallel to one another. A plane perpendicular to all the lines of vibrations is called the plane of polarization.

Huygens was the first who discovered that when a pencil of light falls upon a prism of Iceland spar in any direction except one, it divides into two pencils in passing through it, and presents to the eye a double image of the object from whence the pencil proceeds; he observed also that one of these images was formed by a refraction of the usual kind, and the other is that, the angle of incidence and of refraction, and that the other was not so formed, the ratio of the sines not being constant. He called the pencil by which the first image was formed the ordinarily refracted ray; and that by which the second was refracted the extraordinary refracted ray; Iceland-spar crystals exhibit in the form of a rhomboid, and Huygens discovered that if the rhomboid is cut so as to form a plane face perpendicular to the axis (a plane dividing equal angles between the three natural faces of the crystal, which form the angles of the rhomboid); when the pencil of incident light falls on the rhomboid in the direction of this line, it is wholly refracted in that direction, or the ordinary and extraordinary pencils are not distinguishable from one another; and the angle between them is a maximum when the incident pencil is perpendicular to a plane cut in any position parallel to the axis. When the incident ray is per-
perpendicular to one of the natural faces of the rhomboïd, the angle between the two refracted pencils is equal to 6° 46', 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 and the same light fall perpendicularly on a natural face of the rhomboïd of Iceland spar are suffered to fall upon a second rhomboïd placed so that two like natural faces are parallel to or in contact with each other, each of the first refracted pencils is, got divided into two; the one passing through the second rhomboïd 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 two rhomboïds in contact, the two pencils are turned about through an angle of 180°, so that the ends are reversed. But the same faces being in contact, when one of the rhomboïds is turned either way so as to be at right angles to its first position, each pencil, after passing through the first rhomboïd, 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 rhomboïds 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 rhomboïds with respect to each other.

The circumstantial methods mentioned show that the ordinary and extraordinary pencils, in passing through one rhomboïd, acquire properties of a like kind with respect to two planes passing through the incident pencil at right angles; in two directions through 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, parallel to the vibrations of light, so 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 short diagonal of the crystal, by which it is divided, into the four prisms; the two opposite faces forming the axis are the calcite faces, the other two opposite faces forming it are the uniaxal faces, and the two quartz, tourmaline, and other prismatic crystals it coincides with the geometrical axis of the prism. All these are called uniaxal 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 1816), found that the two images were united in the biaxial crystals, in the directions of both axes.

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, is kept held perpendicular 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 parallel to the former, 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 axis of the prisms from which parallel to each other, 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 a pencil of light falling upon a particular angle from 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 fall upon the surface of a uniaxial plate-glass at an angle of about 54° 35' with a perpendicular to that surface, and the reflected ray be transmitted through a rhomboïd of Iceland spar, whether the principal section of the rhomboïd 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 rhomboïd, 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 above mentioned, though 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° 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 rhomboïd of Iceland spar would be if its principal plane 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 refraction and reflection of common light may be satisfactorily explained by supposing a wave to diverge symetrically every way about 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 are 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 propagation 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 elascity in that medium. The research is founded on the supposition that the arrangement of the particles of the medium is such that, while the attractions exercised by those particles on any one of the luminferous 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 L'onge in the Encyclopaedia Metropolitana, sect. 998, &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 OX, coincident with the axis of the crystal (supposed to be uniaxal). Let OX, OZ coincide with the plane of the paper, and let the light which is incident on a particular face 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.

Vol. XVIII. 2 U

P. C. No. 1144.
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 \(a, A, x, y, b, z\) respectively; where \(a\) and \(b\) (forces of elasticity) are constants depending upon the positions of \(O, O, Y,\) and \(O, Z\) with respect to the particle of the crystal; the force in \(O, Y,\) being equal to that in \(O, X,\) 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 extens of the vibration of a particle in any direction from \(O.\) Let this displacement be represented by \(D,\) and let the line of direction in which the particle vibrates from \(O\) make with \(O, X, O, Y, O, Z\) the angles \(a, b,\) respectively; then \(X = D \cos a, Y = D \cos b, Z = D \cos c;\) and, if the attractions in the co-ordinate axes be reduced to the line of vibration drawn from \(O,\) the whole attraction in that direction becomes \(A \cos a + A \cos b + B D \cos c.\)

M. Fresnel then imagines a surface of elasticity (curve surface of a wave) to be constructed so that the variable radius from \(O\) may be proportional to the square root of the last expression; and, representing that radius by \(r,\) we have \(r^2 = a D \cos a + A \cos b + B D \cos c.\) But, when \(R\) coincides with \(O, X,\) we have \(a = 0,\) and both \(b\) and \(c)\) are right angles; consequently, in that case \(r^2 = D,\) which represent by \(A^2.\) Again, when \(R\) coincides with \(O, Y,\) and \(O, Z,\) we have \(a, b, b)\) are right angles; consequently they also, \(r^2 = D\) or \(B^2.\) Lastly, when \(R\) coincides with \(O, Z,\) we have \(a = 0, b = 0, c = 0,\) and \(r = 0,\) which represent by \(B.\)

Thus \(A, B,\) may represent the three rectangular co-ordinate axes of the surface of elasticity; and the wave is therefore of a spheroidal form.

Let the plane front of an incident wave, perpendicular to the paper, fall upon the plane of the axes \(O, X, O, Y,\) 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. Then, considering only those vibrations of the particles of luminiferous ether in the front of the wave, which take place in lines parallel to \(MN,\) and in lines parallel to that drawn through \(M\) perpendicular to the paper, that is parallel to \(OY,\) the latter vibrations are those which are least affected by the force of elasticity in \(O,\) that; is, by the force \(a, y,\) which holds the place of \(a D \cos a, b\) or \(B^2\) in the value of \(r^2\) (since \(b = 0).\)

The vibrations in lines parallel to \(MN\) must be resolved into vibrations parallel to \(O, X, O, Z\); which, by mechanics, may be done upon multiplying them by \(\cos \theta, \sin \theta,\) respectively; so that, if \(D\) be the displacement of a particle in \(MN,\) we have \(D \cos a \cos \theta, D \cos b \cos \theta, D \cos c \cos \theta, D \sin a \sin \theta, D \sin b \sin \theta, D \sin c \sin \theta,\) for \(O, X, O, Y, O, Z,\) and these being reduced to the direction \(MN\) become \(D \cos \theta, b, D \sin \theta,\) respectively, which hold the places of \(a D \cos a, b \cos b, c \cos c,\) in the value of \(r^2\) since, when \(R\) is in the plane \(XZ,\) \(\gamma\) is the complement of \(a.\) Thus the direction of a vibrating particle in the direction \(MN\) may be represented by \(A \cos \theta + B \sin \theta,\) while the force in the direction perpendicular to \(MN\) and to the paper may be represented by \(A \sin \theta + B \cos \theta.\)

The radii of the surface of elasticity, by the hypothesis of M. Fresnel, are represented by the square root of these terms; therefore \(A\) represents the radius in the direction parallel to \(OY\) on either side of \(M,\) and \(\sqrt{A^2 \cos \theta^2 + B^2 \sin \theta^2}\) represents that in \(MN\) on either side of the same point.

By the theory of undulations those represent the velocities with which two waves of light are propagated within the crystal in directions perpendicular to their fronts; and, being unequal, it follows that there will be two series of waves diverging from \(M,\) their intensities depending upon their velocities. The velocity represented by \(A\) being constant, this branch wave, whatever be the direction of the incident pencil, is of a spherical form and follows the law of ordinary refraction; that is, the sines of the angles of incidence and refraction bear to one another a constant ratio; the other velocity, depending on \(b,\) differs according to the direction of that pencil; and hence arises the extraordinary refraction. Since each of these waves is formed by vibrations parallel to the lines to \(O, M,\) and the lines of vibration \(O, Y, O, Z\) being perpendicular to each other, it follows that the planes of polarization for the ordinary and extraordinary pencils are also perpendicular to one another.

If \(M\) be the centre of the wave of extraordinary refraction, the fronts \(p, q, r, etc,\) at any successive intervals of time will be similar, and the tangents at \(p, q, r, etc,\) in any line drawn from \(M,\) will be parallel to one another; then, if a line be let fall from \(M,\) perpendicular to any tangent \(q,\) the distance \(\delta\) will be always proportional to \(\sqrt{A^2 \cos \theta^2 + B^2 \sin \theta^2}\)\(\theta,\) where \(\theta\) is the angle \(M\) and \(N,\) in the former figure. But by the nature of the ellipse, if \(A\) be the semi-transverse, and \(B\) the semi-conjugate axis, any dissymetry, as one parallel to \(P,\) making an angle equal to \(\theta\) with the semi-transverse axis, is equal to \(A \sin \theta + B \cos \theta.\)

And, since the parallelogram formed on two conjugate diameters is equal to \(A, B,\) it follows that, in an ellipse, \(\sqrt{A^2 \cos \theta^2 + B^2 \sin \theta^2}\) is equal to the perpendicular height of such parallelogram; that is, it is equal to a perpendicular let fall from \(M\) upon the tangent \(P\) as above. Therefore, the projections of the plane surfaces of the waves, on the plane \(XZ,\) (Fig. 1) are ellipses.

The squares of the velocities of the ordinary and extraordinary pencils being respectively \(A^2 + A \cos \theta^2 + B^2 \sin \theta^2,\) or \(A^2\) and \(A \cos \theta^2 + B^2 \sin \theta^2,\) it follows that the difference between the squares of the velocities is \((A^2 - B^2) \sin \theta^2,\) that is, a quantity which varies with the square of the sine of the angle made by the incident pencil with the axis of the sub-ellipsoid. But \(B\) is greater than \(A\) in Iceland spar, tourmaline, beryl, and many other crystals, in which case \((A^2 - B^2)\) is negative; and hence the crystals of this class have been called negative. When \(A\) is greater than \(B,\) as in quartz, ice, etc, the crystals are called positive. In the form of the wave the velocity of the extraordinarily refracted pencil is greater than that of the ordinary pencil; or the index of refraction for the ordinary is greater than that for the extraordinary pencil. And, in the latter case, the velocity of the extraordinary pencil is less than that of the ordinary pencil; or the index of refraction for the ordinary, is less than that for the extraordinary pencil.

In polarized light the vibrations of particles in the direction of the wave's motion are in-phase.

The rule discovered by Huyghens for finding the velocity of the extraordinary pencil is as follows:—In the negative crystals (Iceland spar, etc,) let \(AB\) be the axis in which the double refraction vanishes, and let \(CD\) be drawn at right angles to that axis; then, if a plane perpendicular to the paper pass through this line, the double refraction in such plane will be a maximum. Let \(m\) be the index of refraction for the ordinary, \(m'\) the index for the extraordinary pencil, and imagine a sphere having its axes \(AB, CD\) inversely proportional to those indexes; that is, let \(AB = m,\) be the smallest, and \(CD = \frac{1}{m}\) the greatest. Then the variable radii, \(Oy, \text{ &c.}\) of the sphere will represent the velocities of the extraordinary pencil when light is incident upon a sphere of crystal in the directions of such radii.
M. Biot, who discovered the class of positive crystals (in which \( m' > m \)), showed that when \( AB \) is made longer, and \( CD \) the shorter axis of the spheroid, the radius \( OA \) still represents the velocity of the extraordinary pencil; and M. Fresnel has given the following more general rule: Imagine any ellipsoid, whose axes \( A, B, \) and \( C \) are reciprocals of the refractive indexes in those directions, to be cut by a plane passing through the centre; then, at both ends of the least radius the section will be the lengths of the radii of the ordinary and extraordinary waves, and consequently the velocities with which these waves are propagated in the crystal when light is incident in a direction perpendicular to that section.

In a previous paper on the elasticity it is proved that the ellipsoid of elasticity admits of two circular sections, which are formed by diametral planes passing through the mean axis of the ellipsoid, and that these sections are equal and coincide with the two other axes. The normals to these sections are the directions of no double refraction, or 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 diametrical section of such ellipsoid, the difference of the quotients will vary with the product 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 polarization of light consists in its particles being made, by the attractions of the molecules of the polarizing medium, to vibrate in planes perpendicular to some plane, as an hypothesis founded on the results of numerous experiments, of which it is not proper to mention one or two of the most simple, in addition to the refractions in Iceland spar and the refractions 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, when the light will again 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 ether that is homogeneous when new. Here, or there, may reasonably be concluded that, by the attractions of the crystal molecules, the vibrations of the particles in the waves of incident light were brought to the directions above supposed.

Again, if two pieces of unsilvered plate-glass be placed so as to send the light of the clouds from \( C \) to the eye at \( E \), after reflection at \( A \) and \( B \), the angles of incidence and reflection being the same as \( 45° \), and if, then, the pencil being polarized at \( A \), if the glass \( B \) be so situated that the pencil \( BE \) is in the plane of reflection \( CAB \) (supposed to be perpendicular to both glasses and to coincide with the plane of the paper), the greatest quantity of light perpendicularly to that glass will be absorbed, and that glass remaining undisturbed, if the other be turned about the point \( B \) so that its plane, now oblique to the paper, may make always the same angle with the line \( AB \); in proportion as \( BE \) inclines to the glass, so will the light of the plane of reflection \( CAB \), the light reflected from the glass will diminish, and it will finally vanish or be absorbed when \( BE \) becomes perpendicular to the plane \( CAB \). The loss of the light being invisible to the eye, it is evident that there is evidence that the vibrations of the particles in the polarized pencil \( AB \) are, after reflection from \( A \), rendered perpendicular to one plane, as \( CAB \). Now the reflected pencil \( BE \) remains polarized till it vanishes entirely, which is when it is brought into a plane perpendicular to \( CAB \); at this time the vibrations at \( B \) become perpendicular to their former direction, or parallel to the plane \( CAB \); in which state the pencil is reflectible, but not visible, as it is such as to absorb or disperse the light of that pencil. It appears therefore that light which has been polarized in one plane cannot produce polarized light in a plane at right angles to the former plane of polarization.

By a partially polarized pencil is meant one which, having been reflected once at an angle greater or less than the polarizing angle, when seen through a tourmaline plate capable of revolving in its own plane, or when reflected from a piece of glass, appears, as if the light were polarized, which, like the glass \( B \) above, may revolve upon the first reflected pencil without altering the inclination of the latter to it; the pencil thus seen through the tourmaline, or twice reflected, never vanishes entirely in consequence of such revolution of \( B \), but merely undergoes variations of brightness and passes through several states of greatest and least intensity. It must be observed also that all the different colour-making rays of light are not polarized by reflection at the same angle; and hence it is that white light is not completely polarized when reflected from any transparent medium having a high dispersive power.

Rock crystal, which has the power of polarizing light, is also found or it is well known of the power of polarizing light, and of transmitting it to its ordinary state, when the polarized light is transmitted through it in one particular direction. This discovery was made by Dr. Brewster, who also found that there are crystals like Iceland spar and tourmaline, and several other minerals. Gum arabic, horn, and tortoise-shell were found to depolarize light in every position. Dr. Brewster also ascertained that, if a prism of Iceland spar were placed in a horizontal plane of vibration, upon a plate of mica or topaz, the plate of the latter being vertical, 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 vibration, the horizontal component of the light was extinguished. 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 topaz, in a plane perpendicular to that plate, at 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, and this effect was confirmed by other experiments. Brewster on 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 this effect, is that the rays 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 image that is visible is generally 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 red and blue lines in the plate. If the plate be placed so as to allow the light being polarized by \( A \), the sets of waves enter 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 become circularly polarized, and the intensity of the vibrations 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-
sequently 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 term 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 1/1000 of a degree
of Fahrenheit's thermometer. The Polariscope is a double
polarized ray; and since depolarization is a consequence of
double refraction, it follows that the existence of a doubly
re refractive property in heat is thus demonstrated. [Undu-
labilery Theory of Light.]

POLDERS. [Flower's Agriculture.]

POLE, POLAR. The word pole 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
derived. Thus, it means:—when the magnetic pole of a
right-angled parallelogram is not always directly overhead, but
to another pole, it was natural to call that other point the magnetic
pole. Previously to this use of the word, it had already
acquired a very significant meaning, as the following
sentences of the geometrical problems, with respect to the poles,
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 points which would
become poles of rotation if that circle became the equator.

[Sphere.]

A term seldom passes through several significantdrations,
however, without assuming a generic meaning in 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 naturalised in mag-
netism, electricity, and optics; insomuch that any tendency
towards a particular point, or even towards 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-
sidered as the pole of a circle or conic is the point to which
and 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
tangents be drawn to a conic section, and a point 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 pole
of that straight line.

POLE STAR. [Ursa Minor.]

POLE. [Parch.]

POLE, REGINALD, the celebrated Cardinal, was born
in A.D. 1666, 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., and
Henry VIII. He was a younger son, 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 sent to Magdalen College, Oxford, where
he had the benefit of the instruction of the celebrated
Linacre. As early as 1515, he was made B.A., admitted
into deacon's orders, and, when only nineteen, was made
canoni de Wisbume and dean of Exeter.

About 1521 he was admitted to pursue his studies 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. But the situation of the court of Henry VIII.
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. Tipses 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 Henry VIII. 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
premises, 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 many other of the king's enemies had he
withdrew 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 pretences.

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
pope, by whom he was made a cardinal, employed on several
important embassies, and was in fact a principal adviser
touching all matters which affected the spiritual affairs
of the realm of England, and touching the Reformation ge-

erally. On the death of pope Paul III. in 1549, he mar-
rked the vacancy in the papacy with the utmost interest.
Failing in 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 error of looking after the pope.

He reappeared in his native country 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 remonstrant might take
place, and the re-union was effected. Then began the cruel
measures for the extirpation of heresy and heretics, which have
made the reign of Mary so infamous in the English annals.

Pole, however, did not grow cold to the guilt of 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 acquiesced in the archbap-
tic 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 should be any party to the dreadful
severities of that period.

Besides the high dignity of primate, he was made chan-
cello of both the universities, which he visited by his com-
pelled to absent himself from Rome, and to undergo the
measures of the Reformation in England, had the life of the queen been prolonged:
but her reign was short; she died in 1558, and, by a singu-
lar 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 respect to his character and conduct in those am-
biguous times, may consult his Life, written by Mr. Phillips,
and the Review of the Life, by Dr. Glover Ridley. His por-
trait by Raffaello, well known by the engravings of it, gives
a very lively idea of his personal appearance.

POLEMARCH. [Archon.]

POLEMO (Polémw), the name of several Greek writers,
of whom the most important are:

1. Polemo, the philosopher, the son of Philothoe, who
 published Xenocrates as the head of the Old Academy
 about B.C. 315. (Diog. Laert. iv. 16.) He died in B.C.
 270, and was succeeded by Crates. (Clinton's Fast. Hist.,
 vol. ii. p. 367.)

2. Polemo, the sophist, who was born at Lacon, 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 Polemo has been written by Philostratus, who mentions several of his works. These however are all lost, but there are two funeral orations (tarsepeis λήμψις), supposed to have been spoken in honour of Cynegirus and Callimachus, who fell in the battle of Marathon. These orations were first published by Stephanus, 1567, and afterwards by Rousseau, Toulouse. The most recent and best edition is by Orellius, Leipzig, 1819, 8vo.

(Fabriciaceae Arachideae, ed. Hales, vol. vi., p. 2; Philostratus, Life of Polemo.)

3. Polemo, surnamed Perioketes (περιοκετής, Strabo, ix. p. 396), was a native of Samos or Sicily (Athen., vi., p. 234, d), and was made a citizen of Athens. (Suidas, Polemo.)

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 'Fasti Hellenici,' p. 514. None of these have come down to us entire, but the fragments which are extant have been published under the following title:—Polemiou Perioketos Fragmenta collegit, digestit, Notis auxit L. Preller. Acc. de Polemonis Viva et Scriptis et de Historia atque arte Polemisionarum Commentationes, Lips., 1832, 8vo.

POLEMO (Polemus), 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 Syllaeus (in Prefat. al Aristot., vol. vi.) and Fabricius (Bibl. Gr., vol. ii., p. 170) consider his style to be too incorrect for a native of that city. From some expressions used by Polemo (for instance, the word τιθέθεσαν, 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 Origenes, who quotes him (Cont. Cels., lib. i., p. 26). His work (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 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, however, but several of his anecdotes, 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 Alcinon's 'Varia Historia' and other works, Rome, 1545, fol. Afterwards by J. B. Porta was published with Melitoius 'De Natural Hominis' and other works, Venet., 1592, 4to. There is also an edition of the Greek text by Franc. Montecuccoli, Muttn., 1611, 4to.; and it is inserted by Syllaeus in Polemo's sixth vol. of his edition of Aristotle's works, Franc., 1827, 4to. The best edition is that by J. F. Frantzius, who has inserted it in his 'Scriptores Physiognomivm Veteres,' Altenb., 1780, 8vo, Gr. and Lat., and has added a learned preface.

POLEMO. [PONTUS]

POLEMO, a natural order of monopetalous Exoocons, with a trifid stigma, three-celled fruit, and seeds attached to an axile placenta, the embryos growing in the midst of an albumen. They are allied to Convolvulaceae, from which their calyx, maturation, placentation, seeds, and three-celled fruit distinguish them; and also to the Echial alliance, from which their placentation, undivided capsular, not united, and straight insertion, equally disjoin them. They consist for the most part of gay-flowered herbaceous plants, natives chiefly of North America. The genera Collomia, Phlox, Leptosiphon, Gillia, and Polemomum, are the most common. As they grow in colonies on account of their beauty; as also is Coboia, a climbing plant which grows with great rapidity, and is much used during the summer for covering trellis-works 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 Molfetta in the kingdom of Naples, in 1746. He was educated at the university of Padua, under the celebrated Faccialioti; 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, and became director of 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 mollusca. While travelling in Italy and abroad, he formed a very fine collection of shells, which was purchased by Poli of 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 utrinque Sicilae eorumque Historia et Anatomic,' folio, Parma. Two volumes appeared in 1792-3, 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 1828, 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 mollusca 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
species; and his descriptions are mostly very accurate. He fell however into some errors, the principal of which was that of supposing the testes were organs in the animal for lymphatics. This mistake arose from the circumstance of the former organs in the mollusca being surrounded by a loose cellular sheath, which may be easily injected by quackery.

The first duties of the system in the Anglo-Saxons were given by William I. (1066), to keep the peace and order and to prevent crime and keep the peace. In every town, village, and hamlet, they were to set a watch according to the size of the place, every night from Ascension till Michaelmas, from sunset to sunrise; and the watchmen were to apprehend and examine all strangers, and on their refusal to obey the summons of the watchmen, they might levy hue and cry to take them. The gates of all walled towns were to be shut from sunset to sunrise; the highways were to be kept clear of bush, wood, and ditches for herdsmen's feet from hedge to hedge, so that felons might not conceal themselves.

Every man was to have arms in his house for preserving the peace; and the constables were empowered to take the view of such arms. The prevention of the progress of criminals was one of the primary duties of constables, and they were charged to make present the justices-tenant, or at once to the king or his privy-council; and the supreme executive made provisions accordingly. All the same day the king, or the county, or the hundred quenched 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: '13 Edward I., Sussex: murderer and ringleader of a town of Banister, because he had been held by day, and they did not take the offender.'

Edward II., Kent: manslaughter (upon a sudden quarrel) committed in the highway of Wrotham—three bystanders quenched because they were present when the squire Robert killed the aforesaid John, and did not take him. And in the reign of Elizabeth the public vigilance which this system had created leads a writer of that day to remark, 'Any Englishman is a suspect of treason if he who shows his face thereupon does not only incur evil opinion therefore, but hardly shall escape punishment.' Thus the Anglo-Saxon system of mutual protection has fallen to decay, the spirit of vigilance which characterized it is no longer in existence. The modern constables have no activity of the supreme executive. In process of time great social 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 occasional and requiring a high degree of intellectual cultivation. Persons so engaged, and the more numerous classes who live by manual labour, cannot now follow up the 'quick and fresh pursuit' of felons, at the cry of the hundred or 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 excise of the pursuit would probably be far more dis integrable. 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 cycle has been altered. We cannot now consult the various statutes which measure 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. It is nine years after the statute of Marlborough, the absence of 'quick and fresh pursuit' of felons is noticed as an evil which was increasing.

To supply the energy and alacrity of the old system, fines and punishments have been imposed by the statute of Westminster, 3 Edward I., seq. 9, on all who neglected to pursue offenders. The statute directs that 'all generally be ready and appa ral to the commandment and summons of the sheriffs, and at the cry of the county to pursue and arrest any felons.'

By these various measures the delinquents committed within its limits, and the inhabitants being now, except in a few cases (7 & 8 Geo. IV. c. 31), free from such responsibility, they are naturally more careless of the crime of which they are guilty, or of the apprehension of criminals. And while the disposition of the community to aid the public force in these duties was
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 inadequate, and a faithful division of employment, had become equally urgent in the case of those on whom devolved the duty of keeping the peace and watching over the security of the community. Indeed, however hardy force may be, and however 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, by its very constitution, is incapable of a complete devotion to the purposes 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 regulations, it 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 is only be obtained by the party at whose expense the necessiety has 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 first instance, the constable is called upon to apprehend, 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 very irksome, and the latter, when necessary, is deficient 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 controlling a district by military force is an evil which, under present circumstances, must be regarded as one which can exist to the extent it does only because of the want 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, 1849 (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 appointment of the constabulary on the lines 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 in 1834 (5 and 6 Vict., c. 127) to establish a 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 exhibiting the advantages 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 797 parochial day officers, 2785 night watch, and upwards of 100 private watchmen: including the Bow-street day and night patrol, there were about 4000 men employed in the district stretching from Brentfordbridge on the west to the river Lea on the east, and from Highgate to the metropolitan boundary 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. 93) was one of the leading events of the year 1829. The police were placed under the control of the 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 other parish or part of a parish, on the application of the major of the parish, and the first act of the board was to extend it to 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:—

- Inspecting Superintendent: £100 0
- Superintendant: £90 0
- Sergeant: £70 0
- Constable 1st class: £50 0
- Constable 2nd class: £40 0
- Constable 3rd: £30 0

The sergeants and constables are allowed clothing, and each married man of these ranks is allowed 40. pounds of coal weekly throughout the year; each single man is allowed 40 pounds of coal weekly during six winter months, and 20 pounds of coal weekly for the remainder of the year.

The total number of the force is 3346, who are placed in divisions, each division being employed in a distinct district. Every part of the force is placed under a superintendant of police, watched day and night. The total disbursement on account of the force, for the year 1839, amounted to 221,933l. one-fourth of which is paid by the treasury out of the public revenue, the other three-fourths being paid by the taxpayers. On 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 Thamesside and Dock police, consisting of 27 officers and 60 men, each of whom has charge of three 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 under a superintendent of police since the consolidation of the metropolitan police force. In 1833 the number of persons employed in the several wards of the city was—ordinary watchmen, 500; superintending watchmen, 60; patrolling watchmen 91; beat men, 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 120 men, amounted to about 900l. a year, and is defrayed by the corporation; and the sums levied on the wards for the support of the night-watch average about 42,000l. per annum. In addition to the paid watchmen, about 400 ward constables are appointed.

The police of the metropolis and the district within fifteen miles of Charing Cross (exclusive of the city of London) is regulated by the Acts 10 Geo. IV., c. 44, and 2 & 3 Vict., c. 47, and together they form the police code for nearly a seventh part of the population of England and Wales. The police 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 whose jurisdiction it has occurred immediately examines the circumstances, makes a report, and the measures taken in consequence. A daily report or presentation 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 presentation such instructions are given as any special circumstances may seem to require. Upon any 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 appears to exist there.

. . . . A daily report or presentation 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 presentation such instructions are given as any special circumstances may seem to require. Upon any 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 appears to exist there.
rity to persons and property was sought to be obtained, not by the activity and wholesome vigour of a preventive police, which 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, to the hazard of a temporary and ultimate penalties, in the hope of checking the more desperate offenders.' Not only is the metropolitan police active night and day in preventing depressions and suppressing mendicity, but its attention is directed to giving assistance in case of accidents, reporting nuisances and ob-
structions, and in keeping a vigilant eye upon the recesses of profanity and crime. The same services are performed with more or less efficiency in the large towns which have the chartered body of magistrates.

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 the country, as in the town, some estimate was placed upon 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-sessional 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 an extra pay to be placed upon all rents; in 77 divisions the appointment of a paid or of additional 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 122 the vote was given, that no alteration was required. The local magistracy are in many instances jealous of the interference of the supreme executive; yet, notwithstanding, 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 recommend-
ations involve questions of provincial organization, which are too difficult to be brought within the scope of this 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 considerable sum of the plan was printed with the bill (No. 71, Session 1839); but the measure was regarded as 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 commissioners recommend 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 the country must have found the cost much less than a paid constable. Besides the expenses of judicial establish-
m ents, 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, charges, etc. 1l. in the pound on the valuation of real property in England 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 partly by such means and partly by honest industry, and meet which 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 parish police, when paid, would be the agencies in 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 acquain-
tance with legal duties forms part of the training of a com-
missioned officer. The rates have general rules for its conduct and government. Should a trained 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 government has not 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 one county constable in each county, thus leaving the improve-
ment of the police to their discretion. The act empowers the magistrates assembled in quarter-sessions to report to the secretary of state the necessity of appointing additional constables, and enacts a new frame of 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: Berks, Buckinghamshire, Bucks, Cumberland, Durham, Essex, Gloucester, Hants, Lancashire, Leicestershire, Norfolk, Northamptonshire, Norf., Salop, Stafford, Suffolk, Warwick, Wilts, Worcester, and Worcestershire. A Parliamentary Return (No. 352, Session 1840) gives the description of the constabulary force in each of the above counties, and the addi-
tional rate in the pound which it will be necessary to levy for its maintenance.

In August 1840, an act received the royal assent (3 and 4 Victoria, c. 88) amending the act of the previous session for facilitating the establishment of a paid constabulary. It removed the restriction in the previous act which limited the appointment of constables to one for each parish, or made one to each one thousand of the inhabitants; and made prov-
sions for the consolidation of the borough and county police in cases where the respective authorities desire to enter into such an arrangement.

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 conservation of the peace:—1, The 3 and 4 Wm. IV., c. 90, entitled 'An act to amend and extend the acts for establishing constabularies in the several counties, cities, and towns of England and Wales, and for the better preservation of the peace.'—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:—3, An act for extending the power to the appointment of special constables, and for the better preservation of the peace. Under this statute spe-
cial constables may be sworn in an 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.

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 meaning; it is synonymous with the principles of government, and this is the sense of the Greek 'politeia' (πολιτεία), from which it is derived. Police, in an extended sense, is that branch of policy which deals with the internal economy of the state. In a more restricted sense it is a branch of pre-
ventive administration, distinct from the administration of justice, the object of which, among other things, is the punishment of crimes committed.
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 England. He had the honor of being chosen as one of the candidates for the cardinalate, but was opposed by the party who contended for the succession of Cardinal de Sade. He was, however, 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. On his return, the king, in recognition of his services, appointed him ambassador to England in 1704. He was again called to Paris in 1707, and died in that city in 1719. He was a man of great learning and ability, and is remembered as one of the principal French writers on political economy. He was the author of several treatises on political economy, and is known for his attempt to lay down the general principles on which wealth is produced, as they are deducible from actual facts; it is the business of the statesman, the philosopher, or the politician, to say what has actually been the general prosperity of society, after he has examined the evidence of the political economist, which is an essential part of the evidence, but not the sole evidence to be attended to in the conduct of a nation. The English economists also seem to be divided among themselves. We may think that the principles of political economy, as the term is understood by them, may be deduced with the certainty of mathematical demonstration, whilst others assert that there are many imperfections in political economy which require limitations and exceptions. The desire to simplify and generalize has occasioned an unwillingness to acknowledge the operation of more causes than one in the production of wealth, and to take into account a considerable portion of a certain class of phenomena, the whole has been ascribed to it without sufficient attention to the facts which would not admit of being so solved. (Malhuis, "Principles of Political Economy, Introduction.")

Malhuis quotes the controversy into the billon question as an instance of this kind of error. He afterwards goes on to say, Adam Smith has stated that capitals are increased by parsimony, that every frugal man is a public benefactor. ("Wealth of Nations," b. iii. ch. 4.) This increase of wealth depends upon the balance of produce above consumption (b. i., ch. 3). That these propositions are true to a great extent is perfectly unquestionable. No one who has paid attention to the subject will take place without that degree of frugality which occasions annually the conversion of some revenue into capital, and creates a balance of produce above consumption; but it is quite as obvious that those men who are not very frugal will be temporarily chequed, and population would come to a stand long before the soil had been well cultivated. If consumption exceed production, the capital of the country must be diminished, and its wealth must have a tendency to diminish, from its want of power to produce; if production be in a great excess above consumption, the motive to accumulate and produce must cease from a want of will to consume. The two extremes are obvious, and it follows that there must be some medium, where the different branches of political economy may not be able to ascertain it, whereby, taking into consideration both the power to produce and the will to consume, the encouragement to the increase of wealth is the principal end of political economy. This division presents another obvious instance of the same kind. No person has ever for a moment doubted that the division of such immense tracts of land as were formerly in possession of the great feudal proprietors must be favourable to industry and production. It is equally difficult to doubt that a division of landed property may be carried to such an extent as to destroy all the benefits to be derived from the accumulation of capital and the division of labour, and to occasion the most extended poverty. There is here, as at a point, as well as in the other instance, though we may not know how to place it, where the division of property is best suited to the actual circumstances of the society, and calculated to give the best stimulus to production and to the increase of wealth and population. (Malhuis, "Introduction.")

We cannot enter into anything like an examination, however brief, of the principles of political economy; but we shall merely state a few general propositions which are universally acknowledged as true. 1. Every man desires to obtain additional wealth with as little trouble to himself as possible. 2. The increase of population is limited either by physical causes or by potential causes. 3. The division of labour, and of the other instruments which produce wealth, may be indefinitely increased, by using their products as the means of further production. 4. Agricultural produce is not susceptible of any great increase. The principal topics discussed by political
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 capital and its functions; 7, the nature and conditions of commerce, or exchange of commodities. Most of these subjects are treated in this work under the heads of Accumulation, the Mercantile System, Trade, Barter, Foreign Trade, Money, Currency, Exchange, Profit, Rent, Wages, Wealth.

History of the Science. — The great nations of antiquity, the Greeks and Romans, had no special knowledge of the subject of commerce. They sought 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 mean occupations, and those pursuits to 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 also 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 things there would be no room for the consideration of some of 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 itself, but merely as a means of exchange, for which they made the senate for- bade its exportation. (Cicero, Pro Flacco, 28.)

After the fall of the Roman empire, the free towns that rose in the middle ages, Pisa, Venice, Florence, Genoa, and the Hanseatic towns, were essentially commercial, and with them the 'mercantile' system, as it is called, may be said to have originated, at least in practice; for it was not expounded and reduced to rules until centuries after this. This system consisted in looking to foreign trade as the source of wealth, 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 wars, colonies or factory abroad, were the means employed for these objects. But as each 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 contending 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 mercantilist system, and aimed at the same object, which was, and is, a rich country by subjugating and plundering another, 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 a country' is better than the separate parts, and that 'trades are 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. Gasparo Bescaruffo, of Reggio near Modena, wrote, in 1579, 'Discorso sopra le Monete, e della vera proporzione fra l'oro e l'argento.' In 1588 Bernardino Davanzati of Florence wrote a short treatise, 'Sulle Monete, and another 'Sui Cambi,' or 'The Exchanges.' Antonio Serra, a native of Cosenza in Calabria, published, in 1613, 'Breve Trattato della Causa 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 the country more profitable, by conducting into a condition that he reckons manufactures, which 'a much a greater return than agriculture,' and maritime commerce. But these means, 'adds Serra, 'are of no avail without fixed laws, ordines naturalis, e professio, for different countries to be no covversono where there are continual changes of dy-
nasties and laws.' This shows that Serra, considering the age and country in which he lived, had formed some correct ideas and principles of political economy; he however remained unnoticed, and the author, being implicated, as it seems, in some conspiracy against the Spanish rulers of Naples, was imprisoned for ten years, and underwent the torture seven times, when he was allowed to communicate with the outside world. After twenty years of imprisonment, a complete work of Serra, in four books, was published at Naples, and contains a treatise on the trade and money of the kingdom of Naples; 'Discorsi di Commercio de' Moneti del Regno di Napoli,' 1616, 1618, 1623, and 1629. Bernardino Montanari, of Venice, published a similar work, entitled 'Le 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 work on the subject of commerce at large appeared in England. Raleigh wrote, in 1595, his 'Essay on Trade'; Edward Misdelden wrote his 'Circle of Trade,' in 1623, and Louis Roberts his 'Treasure of Traffic,' in 1641. Thomas Mun wrote, in 1651, his Defence of the East India Trade, in which he exploded 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 earth; he demonstrated, in his 'Treasure of Foreign Trade,' published in 1664, that there is no country which can exhaust the trade of another. In this 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, or a Treatise on Money, in which he demon- strated the laws regulating the rate of interest, and combatted the notion that a country may be drained of cash by an unfavourable balance of trade. (PETTY, Sir WILLIAM.)

In France, the mind was also opened to the contemporary ideas of Sir William Petty, was a great promoter of the mercantile system in all its exclusiveness (COBLET), and the principles of that system continued to prevail in France after his death till the time of Queen Anne. Pierre le Pean, Sieur de la Tour, in his 'Traite de la France,' 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 Vaubay, ed. of the Geneve Royale, in which he proposed a new plan of taxation.

In England, Locke, in his 'Essay on Civil Government' (b. xli, 40-43), argued at length to prove that 'labour is the only true value, and not the product of the land,' which had the same purpose in Hobbes's Leviathan (ch. 24). But these were incidental remarks, and not professed investigations on the subject of political economy.

In a tract published in 1677, entitled 'England's Great Imperfection,' the trade and manufactures of the country 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 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 cen- tury wrote a chapter entitled 'To what Nations Commerce is prejudicial.' (Essai des Lois, b. xx, ch. 21.) In 1696 Davenant wrote on the 'Commerce and Revenue of Eng- land.' In the next century Sir Matthew De la Perruque wrote '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, endeav- ored to draw the attention of the government towards the alleviation of the burden imposed upon them by the various taxes. He 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. (Economies de Tartag.) 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 as a source of revenue they were not in the same shape of rent, they did not add any greater value to the raw material of the commodities which they manufactured or earned from place to place, than was just equivalent to the value added by the produce of the land. Unrestricted agriculture,

the time that they were engaged in those operations. He divided society into three classes: 1, a productive class, consisting of farmers and agricultural labourers, who subsist entirely on the produce of the land, as wages of labour and as a reasonable profit on their capital; 2, a proprietary class, namely, those who live on the rent of the land, or the net surplus produced by the cultivators, after the necessary expenses have been deducted; 3, an inoperative 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, or Constitution Naturelle des Gouvernemens, 1765.) As a corollary to these positions, Quesnay and his disciples concluded that all taxes ought to fall upon the land.

This gentleman, as head of the school called the "Economistes," which reckoned amongst its members the Marquis de Mirabeau, father of the celebrated Mirabeau, Mercure de la Rivière, Dupont de Néron, Coutard, Raynal, Turgot, Necker, and other distinguished names.

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 "Côte," which was a list of rates and 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 "Discorsi Economici" in 1737, with a view of drawing the attention of the Tuscan government to the great value of land and the country called the Maremma of Siena. Bandini advocated freedom of trade in agricultural produce, and recommended the removal of all restrictions upon importation and exportation. He wrote on the subject of the cultivation of the soil and the interest in the land, by the grant of long leases; and 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, 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 half a century. Antonio Broggi of Naples, a merchant by profession, wrote a treatise on taxation, "Sul Tributo," in which he admits that there are three sources of wealth, agriculture, handicraft or manufactures, and commerce. He does not consider that it can be legitimate to tax two of these as "sorts 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 land-tax, or as near as possible, 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 in the mercantile system of the 18th century. While at Paris, he wrote a 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 free trade theory, and those who considered it to be subject to permanent restrictions. Galiani considers 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 states, the nature and cultivation of the country, the quality of the soils, and also their political institutions and relations to other countries. Galiani also wrote, in Italian, a work on money, "Dei Moneti," published in 1750, which is reckoned one of the best on this subject. Taking an enlargal, 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, the difficulty in ascertained before they can attain a station favourable to their development and analogous to that afterwards stated by Adam Smith (b. i., ch. 10), "that the wages of labour vary with the easiness and cheapness or the difficulty and expense of learning a business or acquiring a liberal education, or forming a physician, or a statesman, or a divine, than a common labourer, and therefore the latter has less value than the former. Galiani combats the received opinion of his time, that high prices were a sign of distress. He also 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 Fagnini, born at Maserata in 1715, published in 1721 a work on corn, called "Sopra il giusto Pregio delle Cosè," 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 17th and 18th centuries, compared with those in the 18th. Both works contain sound opinions and interesting facts. Pompeo Nerli 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 1726, ranks with Galiani as one of the most distinguished Italian political economists. He wrote an elaborate work on coin and currency, and also works on the commerce of Italy. In a work on the institution of the Zecche of Italy, he completely exhausted the subject. Carli also wrote "Ragionamento sopra i Bilanci Economici delle Nazioni," in which he combated the fallacy prevalent in his time, that the export of corn was an advantage to the country, and that the export of corn would increase the price of corn, and that it was the same as the value of other sorts of produce. He was one of the leading promoters of the corn-trade in a letter addressed to Pompeo Nerli, in 1771, "Sul Libero Commercio dei Grani," in which he agreed with Galiani in denying 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's work was influenced by popular opinions or prevalent system. Other particulars concerning this distinguished writer are given under Carli.

Antonio Genovesi, born in 1712, at Castiglione near Salerno, became professor of the new chair of "commerce and mechanics," founded at Naples in 1755, by Bartolomeo Intiasi, a wealthy Florentine merchant of that city. Genovesi published his lectures under the title of "Lezioni di economia Civile," and "Lezioni di economia Politica," and also entered into the middle between 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, as well as the principal source of production. With regard to commerce, he adopts the restrictive 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 inculcates 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 showed that capital, labour, and land were the three essential elements of productive power in the state, and that the importance of each varied in different circumstances. He maintained that every man, as a member of society, had a right to the fruits of his labour, and that labour was the foundation of wealth. He also maintained that the distribution of wealth was a matter of public concern, and that the power of the state was necessary to regulate it. He was a strong advocate of the freedom of trade, and he believed that the state should not interfere with the free operation of the market. He was opposed to the idea of monopolies and other restrictions on trade.

The Italian political economists of the eighteenth century are: 1. Francesco Gargioli of Venice, born in 1712, who wrote 'Saggio sul Commercio,' in which he explores commerce as the source of wealth and power, and he questions the idea that it is a source of national decline. He introduced a few subtle suggestions 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 encouraged also by his exhortations. He was a man of a liberal mind and a true philanthropist. 3. Cesare Bec- caria 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 profits to the natural basis of the different capitals. With regard to the corn-trade, he agreed with Carli and Galiani in not advising any general system. He considered large masses of property more advantageous to a country than small ones. He was a man of great principle, as belonging to the school of the 'Economists.' [BECCARIA, CESARE BONEZIANA,] 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 introduction of slaves and the immorality of the laws. He wrote also 'Riflessioni sul sistema fiscale dell'Unione dello Stato di Montecatini,' 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 Pialletti, born in 1717 near Florence, wrote, in 1759, 'Pensieri sopra l'Agricoltura, and, in 1778, 'Veri Mezzi di rendere felici le Società,' in which he advanced freedom trade. 6. Giambattista Vaso, born at Mondovi in Piedmont, in 1733, wrote 'Saggio Politico sulla Moneta,' in which he treats of various questions of political economy. He afterward wrote 'Memorie sopra le monete delle Monarchie, e sopra le Monete della Toscana,' which was published by the Academy of Valence in Dauphine, in 1788. His other works were 'Sulla Felicità Pubblica considerata nei Cultiva- tori della Terre proprii, and L'Usura libera,' 7. Gammarelli Ortes, born in 1712 at Genoa, wrote in 1753 'De l'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 the different classes of society cannot be increased except by the increase of the population. As a consequence of this principle, he asserts that all endeavours to increase industry with a view to increase the national wealth should be supported. 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 draws certain conclusions 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 wealth of the nation; that there is a limit to the increase of population; and that the wealth of the nation is not increased by the increase of population. He also maintained that the state should not interfere with the free operation of the market. He was a native of Naples, published, in 1780, 'Essame Economico del Sistema Civile,' in which he refutes the theories of Mably, Rousseau, and Linguist, who asserted that the wealth of a nation, and civilization, commerce, and wealth, were the origin of all the evils which with evil.
Letters of Paris. Mengatti maintained, that until the first
Punic war the Roman had no commerce in an extended
sense; that from the first Punic wars to 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, and bought all their luxuries and even the neces-
saries of life with the money they exerted from the subject
provinces, and at last they fled gradually again into poverty
and barbarism.

The two or three principal Italian political economists
of the eighteenth century. The complete collection of all the
Italian writers on political economy was edited by Custodi,
in 30 volumes, 8vo. Melzi, the vice-president of the Italian
Republic, compiled the necessary funds for the
undertaking. Custodi was afterwards followed by Mons.
Leon counsellor of state of the kingdom of Italy, baron,
knigh 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 consi-
dered as the founder of the modern school. In 1776
Smith published his great work, with the modest title of
"An Essay on 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
price of commodities, the wages of labour, the profits of
stock, and the rise and fall of the prices of the different
trades. The following chapter considered the nature of
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 various systems of political eco-
omy. Smith did not follow the French, in his exposition of
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 he at the same
time maintained, that a productive kind of labour, and the home trade as more productive than foreign
trade. These positions have been combatted by writers who
have adopted many of his general views. On the subject of
corn and the like, as well as in the debate on the supposed
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 national vicissitudes; whilst others content
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
prevailing in the science of the present day. The effects of
unproductive 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-
change of commodities, and labour in the sense of the
voice of production of fresh goods; by the Malthusians
employed in the production, as well as to diminish the quantity
of the raw materials employed; in short, to produce with so little
labor, time, and cost as possible. To increase the
distributive quantity, performed but a small part of the work
and at 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

Malthus notes most of the writers, Italian and foreign, 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 science: 1. To investigate the nature and
means of obtaining the above results consist in power,
which is increased by capital, machinery, credit, association,
distribution, of labour, the knowledge of the means to improve,
and will or activity, which is strengthened by liberty, secur-
ity, 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 notes 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 construc-
tion of good roads, the distribution of a part of the
increase of population to the industrious, the establishment of public libraries, consisting of useful books,
collections of natural history, and of philosophical in-
struments, botanical gardens, &c.; the foundation of gra-
tilian schools in every town; the establishment of
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 in-
vestigations of each district; the distribution of
orders and rewards to artists and architects; the
establishment of public burthens. 4. The payment of the judges by fees on
the causes which they decide, which is still the case in several
countries of the Continent, instead of a fixed salary suffi-
sible.

1. Too heavy taxation, which, by gradually diminishing the

2. The unequal distribution of public burdens. 4. The payment of the judges by fees on
the causes which they decide, which is still the case in several
countries of the Continent, instead of a fixed salary suffi-

same time Malthus published "An Enquiry into the Nature
and Progress of Rent," a subject which was afterwards in-
vestigated and expounded by Mr. Ricardo, in his "Principles
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. [Ric-
ardo.]
cient to place them above temptation. 5. The inoculation or toleration of popular superstition, false miracles, and impostors. 6. The tribunal of the Inquisition and other inquisitorial censorship, index of forbidden books, &c. Gioia is an advocate for large masses of property, large masses of labor, concentration of capital, and the advantages of large farms over small ones, the government of Piedmont to repeal the decree by which the rice-growing belongs to the crown or the communities were parceled out into small holdings. Gioia gives the preference to arts over agriculture, and he is the only one among the Italian political economists who has established the principle of the 'association of labour' (as in the case of joint-stock companies). He views the potential source of wealth and has depended upon its advantages. Gioia wrote also his 'Filosofia della Statistica,' which may be considered as an appendage to his work on political economy.

POLIZIÀNO, or POLÌTÌÀNUS, ANGELO, born at Montepulciano in Tuscany, in 1454, was the son of Bene-
detto Ambrogini, a doctor of law. In after-life he dropped
his paternal name, and assumed that of Poliziano, from his native town Mons Polizianus. Lorenzo de Medici took care of his education, placed him under good preceptors, and provided for his comfort. He entered into clerical orders, took his degree of doctor of law, and 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 antiquities, and he was his private and companion for the remainder of his life. Poliziano had studied Latin under Cristoforo Landino, Greek under Andronicus of Thessalonica, and philosophy under Ficino and Argyropulus of Constance, and he was much read in the works of Plutarch, Latin and Greek at Florence, a chair which he filled with great reputation. He wrote scholia and notes to many ancient authors, Ovid, Catullus, Statius, Suetonius, Phiny the Elder, and a great number of his quotations have been translated into Latin the history of Herodotus, the manual of Epictetus, the aphorisms of Hippocrates, some dialogues of Plato, and other 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 Lenzoro. 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, and the correspondence was continued by Bartolemio 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 marriage ended in 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 intolerable 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 offended woman and the irreligious hoardings inimical to human knowledge; 2 'Sylvam,' 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 considered as the earliest and one of the first Italian musical dramas. His Latin works, including 12 books of Letters, were published at Paris, fol., 1512.

POLARIS are trees which have had their tops repeatedly cut off for the sake of the faggot-wood, which is used for burning and heating bakers' ovens. The appearance of an old pollard may, in particular situations, be thought picturesque, but nothing can be more unsightly in a landscape than a group of pollarded trees. They are not, however, as is 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 pollarded, which if left to grow would in time produce valuable timber, is a very great loss to the proprietor of the land, and but little profit to the tenant. Supposing an oak pollard when twenty years old, and lopped every ten years after, there will be seven loppings only, worth a few shillings altogether; in oak this is as good as nothing. The expense of the labor is so much more profitable to all parties if the pollards were all rooted up, and a few timber-trees planted at considerable distances from each other in the hedgerows. Where wood is required for fuel, it is better to plant a good coppice interspersed with timber-trees; and

if this be done judiciously on good sound land, the quantity 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 from the tree is in addition to what is obtained 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 margin 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 to grow in their present state. If they be lopped every seventh year, they produce rods and faggots, which are readily disposed of. Hence the common saying that 'a willow will burn before an oak will burn the sadder.'

To manage pollards advantageously the head of the tree should be cut off at a moderate height while the tree 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 in once, which after a few loppings will become 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 above ten feet should be allowed to remain if it is 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 consist of many small spherical granules, filled with a fluid in which 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, protrudes beyond the extine at some point or points of the surface, 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, where they enter the ovule and unite with the sex of the ovule, or the spermatia, with the exine of the ovule, where eventually the vegetable embryo makes its appearance. The contents of the original case of the pollen are emptied into the tube, where they are then metabolized.

The pollen grains, although usually spheroidal, 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, Acaea, 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 Asclepiadaceae the grains are enclosed in a bag consisting of the lining of the anther, or pericarp.

The minute oily and amylaceous molecular matter 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 is given such a motion that these molecules were of an animal nature. They appear however to be in no respect different from similar materials in other parts of the vegetable fabric, except in the minute-ness of their division.

(Lindley's 'Introduction to Botany,' ed. 3, book i., cap. 2; Fritschke. 'Ueber den Pollen,' 4to, 1837, St. Petersburg.)

POLLENZA. [MALLORCA]

POL'LLIA, a genus established by Mr. J. E. Gray for certain species of plants, which grow in Africa and Asia, and which Mr. Gray proposes to comprehend under this generic appellation differ from Triton in the absence of external valves, and from Porphyra in the presence of crenulations on the columella. There are also crenulations on the outer lip.

Example, Pollaris articulata (Pollen articulata, Linn.).
POLLIÇIPES. [CIRRIPEDA, vol. vii, p. 208.]

POLLIO, CAIUS ASINUS, was born B.C. 76, and appears to have been of no particular consequence. (Vell. Pater., ii. 128.) He is called by Cas-
trius a Marucinian, and was probably a descendant of Hierius Asinus, who commanded the Marucini in the Massian war, as he was killed in that war. (Liv. Epit. 73.)

We first read of Pollio as the public accuser of C. Cato (B.C. 54), who was acquitted through the influence of Pompey. (Tuc., Diad. de Orat., 34; Cic. ad Att., iv. 15, 16, 17.) On the breaking out of the civil war between Caesar and Pompey he took the side of the former, and accompanied him in the passage of the Rubicon. (Plut., Cæs., 32.) He was afterwards sent by Caesar, under the command of Curio, to Sicily and Africa, and after the defeat of the latter he was employed with a force of Greek mercenaries in the neighborhood of Utica, and thence passed 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 (B.C. 46) he accompanied Caesar into Africa and Spain, and on the return of Caesar to Italy he appears to have been made one of the fourteen praetors who were appointed by Caesar at that time. (Drunnann, Ge-
sechke Roma., vol. ii., p. 6.) Pollio probably did not return to Italy with Caesar, since we find him in the following year (B.C. 45) acting as Caesar's legatus in Spain, where he carried on the war against Sextus Pompeius. (Dio, xiv. 10, 17.) On the death of Caesar (B.C. 44) he appears, if his letters to Cicero contain his real senti-
ments (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 party. (Plut., Cæs., 46.) He was one of the government of the province of Gallia Transpadana, and was nominated by the triumvirs as one of the consuls B.C. 48. During his consulship, Virgil addressed to him the following poem (Ec., 4.6) to Antony against the Dalmatians, whom he conquered, and obtained the honour of a triumph. (Dio, xiviii. 41; Ap-
ian, De Bell. Civ., v. 75; Past. Capitol.; Hor., Carm. ii. 1.) In 42 he was one of the three praetors to have charge of the public affairs. He took no part in the war between Augustus and Antony, and when asked by the latter to accompany him to the Aetian war, he declined doing so on account of his elderly age and infirmity. He died a. d. 4, at his Tusculum 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 extensive knowledge of natural history, for he wrote the Nat., xxxiv., 4, 6.) He founded the first public library at Rome, in the Atrium Libertatis, on Mount Aventine. (Isid., Orig., vi., 5; Ovid., Trist., iii., 11, Mart., Epig., xiii. 3, 5.) He left a work on the Æneid with Nasidius, which, however, the de-
fect of which has 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 (Ec., iii. 86; vii. 10) and Horace (Carm. ii. 1, 9, 12; Sat. i., 10, 42), were far above the common standard. His history of the civil wars, which was comprised in seventeen books, is quoted or referred to by several of the ancient writers. (Plut., Cæs., 46; Suet., Cæs., 30; Appian, ii. 82; Tac., Ann., iv., 34.) His orations are fre-
frequently spoken of by Quintilian, but his style is condemned as deficient in clearness and ease. (Quint., Inst. orat., x. 1; compare Tac., De orat. 211; Senec., Ep. 16.) Pollio also appears to have been an exacting critic of his contemporaries, and to have attacked them in a very severe manner. He found great fault with the orations of Cicero (Quint., Inst. orat., xii. 1), and said that the 'Com-
mentaries' of Cæsars were deficient in historical accuracy. (Suet., Cæs., 56.) He remarked a kind of Patavinity in the style of Livy (Quint., Inst., orat., viii. i. i. 5), and appears to have censured Sallust for the use of ancient words also. (Horat., Od., iii. 10.) All his writings are lost, with the exception of a few letters to Cicero.

(Thörbecke, Commentatio de C. Asini Pollionia Pite et Scripta, Leyden, 1820, 8vo.; Eckhardt, Commentatio de C. A.
cest dei, quod opus est, in Archiv. der neuen Griech. Alterthumskunde, iv., 1743; Meyer, De rebus Romanorum fragmenta, p. 211, Zürich, 1832; Orelli, Onomasticon Tulliamum, vol. ii. p. 76; Drunnann, Geschichtliche Rom., vol. ii., pp. 1-12.)
met with the most favourable reception. Kublai was especially pleased with Marco, and he entrusted him with missions to various parts of his empire. Kublai then made him viceroy of China proper, after which he passed on to Japan, China proper, and Tile, 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 country he visited. He therefore a distinction ought to be made between his own observations and those which he derived from the reports 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's 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 considerable expense, to sail on the expedition. They set out in 1291, traversed China, embarked on the coast of Fokten, which lies opposite to the island of Formosa, and thence they proceeded through the straits of Malacca to the island of Ceylon, and from thence to Orzum 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 Venetians thought of returning home, and at last arrived at Venice in 1295. The legend exists that it carried him to 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 took with him on his travels and having made a manuscript with a fellow-prisoner of the name of Rustichello, 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 public.

After peace was made between Genoa and Venice, Marco Polo returned home. His father, Nicono, was still living, but he died in 1316. Of the later period of his son Marco Polo is not informed. The 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 contemporary and worthy of confidence. But accurate 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 geographer, and to the whole of the world. In 1874, after the Ritter, a voyage to the eastern part of Asia, and the Chinese and Arabian maps which he brought home encouraged and assisted the Portuguese navigators in finding a passage to the East, the breed of Columbus, the first European who visited China Proper, and the 'Weimar Almanac' for 1840 give the greatest estimate. The statements of the population are equally discordant. It appears to have been ascertainment, in 1796, to amount to 1,250,726. 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 Köppen, in 1856, makes it only 1,621,000; but Schmidlin, in 1832, makes it 1,785,000. Weichmann makes it only 15,500 square miles: Schmidlin (1833) asserts that the first estimate is certainly too large, and says it seems to pass through the straits of Pas, to the coast of Arabia. The three Polo in the year 1293 has 1,955,000; and the 'Weimar Almanac for 1840,' quoting Bulgari, has 1,967,000.

Face of the Country; Soil; and Climate. This government is one of the most fertile in the world, except the elevated banks of the Dnieper and some other rivers. The soil consists of a thick layer of black mould on a basis of clay and sand; it is either arable or rich meadow; the forests are fine and immemorial. The heaths are covered with nutritious grass; those where furse and broom predominate are common only in the south-east part of the region. The principal river, which is the whole country slopes, is the Dnieper, which is never frozen over, and is navigable throughout the year. The Kiew, Kherson, and Ekaterinolow, is everywhere navigable. Its chief tributaries are the Trubesch and the Sula, with the Uldai coming from Tschernigow, the Pidz and the Udal. The Udal is divided into three branches: the right forms for some distance the frontier towards Ekaterinolow. The Sula and Pidz 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, Polats is the most fertile and lake: the lake measures 1,100 square miles. 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 barley, and millet, and a variety of peas, with a mixture of tender barley, and millet. The inhabitants cultivate also peas, lentils, rape-seed, linseed, and tobacco. All kinds of vegetables known in Russia thrive, even the most 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. On the Dnieper the inhabitants use a kind of gondola, using on its banks for thatch and for fuel; in 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 horses are of magnificent size; the great oxen of the Ukraine retains 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 the importation of Merinos has been greatly improved, and even 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 raise them. The great trade of the region is in horses, and the horse trade there is considerable. There are likewise blue Caspian or Chinese geese and Persian ducks. Hares

P. C. No. 1146.
and partridges are abundant, and, on the banks of the Duipper, Numidian cranes (Ardea virgo), swans, pelicans, red ducks, water-hens, and snakes of all kinds. Though the Duipper and other rivers abound in fish, the Russians consume so much in their numerous fasts, that it is necessary to regulate the quantities which the Duipper furnishes, as well as the Silurus Glans, Linn., of the beddar in which the glue is made, and the dried skin is used as a substitute for window-glass. The country is periodically infected by immense swarms of locusts; goats and sheep and a kind of quail are very scarce. There is an open 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 joynt stock work in small factories for domestic use, and it is only of their fine liquors and preserved fruits that there is a surplus for exportation. The distilleries of brandy are considerable. The Sula and Paisol are navigable only in the spring; the Duipper only touches the frontier, and is scarcely navigable beyond the limits of the government on account of its cataracts. This want of inland communication lessens the value of the produce, and in former times the Sula was frequently called the crop to rot on the ground.* A great change 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. The exports are corn, grain, black and colourless oil, hemp, flax, tobacco, honey, wax, wool, tallow, butter, horses, oxen, preserved fruit, and liquors.

The most important trading towns are Poltava, Kremenets, and Korets. There are twenty-two towns 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 and whitewashed and with gardens, being surrounded with orchards and gardens, have a very cheerful appearance.

The majority of the inhabitants are Little Russians, mixed with a considerable number of Great Russians and some German colonists. At Kremenetschuk there are some Greeks and Armenians, and a few Jews. The Greek clergy are under the bishop of Poltava and Pereslavski, who has 983 parishes in his diocese. Education is at a very low ebb; according to Schmidlin, ‘there were, in 1832, only twenty schools (including one gymnasium), with 110 masters and 1823 pupils, of whom only thirty-nine were girls. To these must be added five schools, under the clergy, with 608 pupils, of whom 39 were girls.’

The southern frontier was formerly defended by a chain of forts, garrisons, and garrison regiments, called the Line of the Ukraine, which extended from the Duipper to the Donets; 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 Poltawa and Worskla. 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, according to Schmidlin, a citadel in the centre, and a small one on a small eminence. Hüschelmans 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 the St. Panteleon, a chapel in the cathedral, 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 Reshetilowka, celebrated for its fine breed of sheep.

The following are the other chief towns: Mirgorod, on the Khorol, has 7400 inhabitants, and holds great herbage; Lubuyg, on the Sula, has 6000 inhabitants. Pereslavski, at the confluence of the Alto and the Trubesh, has a great trade in cattle and corn, and 8000 inhabitants. Kremenetschuk, to which falls the confluence of the Kagarlik and the Duipper, has a considerable trade and a wool-fair, and 8000 inhabitants. Its liquors and preserved fruits are very excellent. Roman, or Romen, on the Sula, a small town, with a population of not above 2000, is celebrated for its fairs, especially that held at the Ascension. Goods to the amount of more than fifteen millions of rubles are offered for sale.

(Hassel; Cinnabach; Stein; Schmidlin.)

POLYADELPHIA, the name given by Linnaeus to the sixteenth class of his sexual system. It was so named from polis, 'many,' and adelphos, 'a brother,' in allusion to the stamens being collected into several parcels. In consequence however of the difficulty of ascertaining this point of structure in many cases, the class has been suppressed by some Linnean botanists.

POLYANUS is the author of a work called Ἱστορία, or Ἱστορικά, or Ιστορικά, (Stratagems of War), in eight books. He flourished in the first or second century 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. Aurelius and Caligula. He was the son of a patrician, and it is not very improbable that 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 up of his own observations, or of those of his predecessors. It is divided into two great books, in the manner in which these books are usually arranged. The first book contains his own observations on the art of war, which he describes as having been made under M. Aurelius and Caligula; and the second book, which contains the translations from the Greeks, is placed under the name of Polyenus, the son of the first book.

The first edition of Polyenus was published by Casaubonis at Lyons, in 1539; another edition, with a Latin translation, appeared at Leyden, in 1614. The first English translation was published by Mushinna, at Berlin, in 1736. The best edition however is that by Corpes, Paris, 1689. Polyenus has been translated into English by R. Shepherd, in his Military History of the World, 1739, into German by Seybold, in 2 vols, Frankfort, 1793 and 1794.

POLYANDRIA, the name given by Linnaeus 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.

POLYANYTHES TUBEROSA, or the Tuberosa (a corruption of Planta tuberosa), is a tuberous-rooted plant highly prized for the delicious fragrance of its flowers, on account of which 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 Europe by Gerard in 1597, and it is mentioned by the Abbé de Mauroy as being cultivated in France. It is a native of South Brazil, which is probably the original of the garden plant.

The tuberose is too tender a plant to be cultivated in England, but in the South of France it finds a climate suitable to it; and the Genoese supply 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 much of the produce of the soil, will not flourish.

In selecting tuberoses 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 placed in the open air, and when they have been
brought in, 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, and excessively rich soil should not be used. As far
as possible enough of the variety from seed is
required every four years.

POLYANTHUS NARCISSEI is the same as Narcissus Tazetta. [Narcissus.]

POLYBIUS, the son of Lyonotos, was born at Megalopolis
in Arcadia. The exact year of his birth is not stated by any
good authority, and the account of Suda, who places it in
the reign of Ptolemy Euergetes (who died about 222 B.C.), is
irreconcilable with what Polybius himself (xxv. 7) relates,
that in the reign of Ptolemaus Euphrates, when he was to
take his father's embassy to that king, he had not attained
the legal age, which, according to Poly-
bius himself, was thirty, previous to which the law did not
allow any one to take part in public affairs. According to
the statement of Suda 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 could not possibly have been ready to
accompany, with Casaubon, that he was born about 264 B.C.,
so that at the time of the intended embassy he must have been
about 25 years of age. He seems to have acquired the prin-
cipal part of his knowledge of the affairs of his city while
his 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 Philopenem, the greatest general of
the Achaeans. When Philopenem died, Polybius is said
to have been one of those who carried the urn containing
the ashes of the deceased to the grave. (Plut., Philopo,
1.) During the war of the Romans against Persus, king of
Macedonia, he advised his countrymen to observe a strict
neutral policy, and when they consulted him on the subject,
he was entrusted with the command of the cavalry (169 B.C.), and was sent as ambassador to the consul Q. Marcus, to declare that the Achaeans were ready
to give their assistance as soon as might be required. (Polv.,
xxviii. 3, 6.) The year following, when the two Ptolemaic, kings of Egypt, asked the Achaeans for support against Antiocbus, it was particularly stipulated that Poly-
bius should be appointed commander of the horse, which shewas
in command of 2,500 cavalry, in the distinguished capacity of
a cavalry commander. After the destruction of the kingdom
of Macedonia, the Romans, not satisfied with having taken
cruel vengeance on those Achaean states, which they sus-
ppected of having supported the cause of Persus, made out a list of 1600 distinguished Achaeans, and sent them
to Italy to be tried. But instead of being brought to
trial, they were distributed among the towns of Italy. Poly-
bius himself, one of the 1600, defended before the chief
follow-prisoners, for his genius and talents attracted
the attention of Abinius Paulus, who made him the in-
structer of his two sons Fabius and Scipio. Those young
oilmen, who became friends to him, requested and
obtained permission from Polybius to see him. Polybius
himself (xxxi. 9, 10) relates a charming anec-
dote of the tenderness which Scipio, the younger of the
two brothers, showed to him; and he adds that Scipio
implied him to have left him groaning, but permitted him
to become able to withstand the torture of the Roman
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
both to assist them to administer justice on those who
had wronged them, and to recognise the superiority of the
Romans, whose power it would be hopeless to resist; for
an inscription mentioned by Pausanias (vii. 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 poli-
itical annihilation. Polybius soon returned to Rome, to accom-
pany his friend Scipio on his military expeditions. It must
have been before this time that he had conceived the idea
of writing his great historical work; and for this purpose he
made more profound and extensive studies than any other
antient historian. He not only studied the Roman con-
stitution, and searched the archives which are open to him
with the most distin-
guished 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 150 B.C., or whether, as is more probably the case,
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 Carthage, Polybius
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 Romes.
Pliny says that during the siege of Carthage, Polybius ex-
empted from military service, in which he was undertaking,
was provided with everything that could facilitate the accomplish-
ment of his objects. Immediately after the destruction of Carthage (146 B.C.) he
hastened to the Peloponnesus, where he spent the remainder
of his life in writing his work Polybius, however,}
what 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 most possible ease for his officers and the
suspects of Philopenem and Aratus, with whose memory the happiest associations of his country-
men were connected. After the Roman commissioners
had left Greece, in 145 B.C., he was appointed by the king of
Pergamus to assist the emperor. With the most in-
defatigable zeal he traversed the country, everywhere en-
deavouring to preserve peace and unity, and to introduce
salutary regulations. His merit on this, as well as for
other occasions, was duly acknowledged and rewarded throughout
Peloponnesus, and statues, with inscriptions recording his
exterrions on behalf of his country, were erected at Megalo-
polis, Acacestum, Mantinea, Paltiumum, Teges, and other
places. Soon after he left Athens, fell a victim to the affairs of his country,
and he made a voyage to Egypt, which, according to Strabo,
he visited in the reign of Ptolemaic Physcon, who ascended
the throne in the same year that Corinth was destroyed.
The remaining years of his life seems to be devoted to
the revision and completion of his historical work, for unless
we suppose, with Schweigheusser 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 (Ad Fam. v. 12) merely mentions a
work of Polybius on the war against Numantia. The time
of his death is uncertain, for the only information that has
down to us is the statement of Lucan (Macrob., c. 23),
who says that Polybius, on returning from his last expedition,
fell a victim to the fatal day at the age of 82. Supposing this statement to be correct, he
must have died about the year 122 B.C.

The great historical work of Polybius (Hist. 4 v. 22) a
very valuable source of information on the events of two distinct
eras, the first of which comprised a period of 53 years
from the beginning of the second Punic war to the over-

-2-
the overthrow of the kingdom of Macedon, including the immediate consequences of this event, that is, the pacification of Rhodes, and the sending of the 1000 Achaean prisoners to Italy. The second part began with the war in Spain against the Gallic tribes and the Celtiberians and Venetirians, and ended with the destruction of the Gallic tribes and the Cimbri and Teutones (Neibuhr, Hist. of Rome, vol. iii., p. 49), and especially from the manner in which Polybios (iii. 1-5) speaks of these two divisions of his work, that they were written and published in separate volumes, and afterwards put together to form one whole. 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 division of the work, and contain a detailed history of the events of the war from the taking of the city by the Gauls to the beginning of the second Punic war. 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 Polybios was to show how the Romans, with their admirable 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 not essentially a history of Rome alone, but one that was to be, with its history and 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 summary of the same, which Polybios himself did for it. After giving an explanation of the causes of the second Punic war, Polybios 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 Macedon, after the end of his war against the Aetolians, entered into a league with the Romans, and how Philip formed an alliance, with a view of dividing the kingdom of Egypt between them; how at first they acted insidiously, until at length Philip made open war on Egypt and Samos, while Antiochus invaded Coele-Syria and Phoenicia. After this, I propose to give a brief account of what took place between the Romans and Aetolians, 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 Aetolians, by which they were induced to call Antiochus to their assistance, which gave them an opportunity to attack the states and houses of the Achaean 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 manner the Romans, after the chastisement of the Galatians, gained the undisputed sovereignty of Asia. After this shall be given an account of the calamities of the Aetolians and Cotebalians; of the war with the Gauls, and the Gallogrannians, and of that which they carried on with Aetarshis against Pharnaceus. Then, after having described the union and the arrangements of the Peloponnesian confederates to defend the crown of the Roman empire, I shall subjoin a short recapitulation of my whole narrative. Finally, I shall add an account of the expedition of Antiochus Epiphanes into Egypt, of the war against Persia, and the overthrow of the kingdom of Macedon. 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 Polybios began with the war of the Romans against the Aetolians, which was destined to describe those of the Carthaginians against Messinians; of Attalus against Prusias; and how Aetarshis, king of Cappadocia, after being driven out of his kingdom by Oropheus, again invaded possession of it; and how Scipio, 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 was, in fact, concluded with the history of the Carthaginians against the Romans, and the separation of the Lacedaemonians from the Achaeans, which led to the great catastrophe by which Greece was made a Roman province. These were the chief heads; but the work was interspersed with episodes or dissertations on various subjects, such as tactics (vi. 17-40), geography (xxxiv.), political 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 connected with the history of antiquity, such as that of Rome; and it is evident that many points in his dissertation on Roman tactics are not quite so clear to us as we could wish.

The study and research of Polybios before he began to write have been a subject of wonder, with his almost unparalleled impartiality and love of truth, have given it a character of authenticity such as very few historical works, either of antient or modern times, can claim. He is a severe critic of his predecessors, by whose writings he has been thoroughly acquainted; and although he himself was under the greatest obligations to the Romans for their behaviour to him, still he did not spare them wherever they deserved censure (see especially ix. 10, and xviii. 18). The love of his country is so much more evident in his last book, the only one who endeavoured to draw it into the fatal conflict with Rome. But the distinguishing character of his work is its didactic and practical tendency (τοποθετειν). He did not write for the sake of amusement, or of holding 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 a prudent statesman deduces the causes of the prosperous or the misfortunes of his state, and from these deduces the means of avoiding the former and providing for the latter. He thus wishes to guide his reader, and not to allow him to form his own opinions; but setting aside the consideration that an intelligent reader may and will always judge for himself according to his own reasonings, and he recommends it to 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 Polybios was not to make his work popular with the multitude, but to instruct and guide men who are entrusted with the care of their country, abstained from all rhetorical embellishments of style. He looked with contempt upon the refined affectation and hollowness of the rhetorical of his time, for true public oratory had long since passed away, and he thought that a political orator must confine his heroes making 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 unnecessary, he gives the reader a man's good reason in his own words. It is natural that under these circumstances the orators of his own as well as of a later age should have been unable to appreciate Polybios. (Neibuhr, Hist. of Rome, vol. i., p. 539.) Dionysius, though he was not a judge against, Velleius, says that the history of Polybios is written in such a style that no one can endure to read it through from beginning to end. Polybios has also been accused of having introduced into his work intruders, such as the annals of the Rhodians, and the wars of the Rhodians and the Aetolians, and of not having finished the work; but we may however admit that there were more of such expressions in those parts of his work which
Philadelphia. It is a 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 renowned for his cruel death of the martyr. Both these epistles may be read in an English translation in a volume published by archbishop Woakes 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, he went to Rome, where he was received with Anicetus, the bishop, and other Christians there; and that while at Rome he strenuously opposed the heresies of Marcion and Valentine. This fact is stated by Irenæus, bishop of Lyons, who was pupil of Polycarp.

POLYCÉRACHIA. [CYCLORHANCIATA, vol. vii., p. 249.]

POLYCHROME, the colouring matter of saffron (Sarprenion), which consists of the dried stigmas of the flower of the Crocus sativus. This substance was first examined in 1806 by colour chemists and was at once given 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 consistency of 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 viscous. Water and alcohol dissolve it readily, but water and oils do not; the sun's rays destroy the colour of the aqueous solution of polychrome, and it cannot be restored. Sulphureous acid renders both the aqueous and alcoholic solution of polychrome of a deep indigo-blue colour, which gradually changes to violet, violet acid gives it 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, brown; disulphate of lead, saffron-colour; and carbonate of mercury, red: acetic acid 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, carbolic acid, and carbonic hydrogen; the charcoal remaining yields cyanogen when calcined with potash. Polychrome does not appear to have been analyzed.

POLYCHROMY, a modern term (from the Greek πολύς and χρώμα) used to express the antient practice of colouring in 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 in the Grecian refinement of the polychromy of 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 of 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 than probable, where the architectural members were subject to so great a variety of forms and proportions, that the decorations in the antient architecture admit of every 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 ornamental work in most of the architectural ruins of Greece. Many traces were discovered by Dodwell, Stuart, Chandler, Brundsted, Semper, and others, upon the principal Athenian monuments: upon the temple of Theseus, the Parthenon, the Propylaea, the Erechtheum, the temple on the Acrocorinthus, the monument of Lycurgus, the outer propylaea of the temple of Core at Eleusis, and the greater temple at Rhæmus; also upon the temple of Apollo at Bassæ in Arcadia, the Doric ruins at Corinth, and the temple of Marathon, and upon the temples of Selinus in Sicily, and upon the basilicas at Pæstum. Upon all these temples, except the Doric ruins at Corinth, and the temple of Minerva in Agina (commonly called the temple of Zeus Panhellenios), 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 cela of the temple of Theseus was of dark red and black. The temple was covered with a stucco and colored red. In a ruder age, when most temples were constructed of wood, before the use of marble or other stone, the application of colour was undoubtedly more general. The colours was undoubtedly more general in the temple of Minerva Parthenos at Athens, which was apparently degenerated into a mere taste for gaudy colours, and to have been very general, as we see in the ruins of Pompeii, where however occasionally the Arabeo-装饰 was upon the walls of the courts in the larger houses are very elegant.

With regard to the system of decorating the mouldings, it appears, from the traces found upon antient monuments, that they were painted in various ways and in a great variety of colours and others described by Pausanias. In the wearing period of time the decoration of colour must have greatly heightened the effect of even the richest mouldings. These decorations were not confined to the mouldings of the entablature; the ovoli, the echinus, the astragal, and the plain edge of the cornice, or base, were also sometimes coloured. Foliage, ovate, and beaded were the ordinary decorations, but on the Doric tama' a fret was generally painted; and the cymatia of the pediment-cornices were frequently ornamented with gilded metal-work; it occurs that the walls and the figures were generally gilt. The faciae of the architraves and the cornice of the cornices were left plain, but the Doric architrave was sometimes ornamented with gilded shields, as in the Parthenon at Athens, where they were placed immediately beneath the metopes. It is probable that the walls of temples decorated with sculpture were coloured, which was absolutely necessary to give the sculpture a proper relief; for the same reason the tympanum of the pediments would also require colour. In the Doric order the tetrastyle would generally 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, with or without relief, to throw the ornament upon the triglyphs, its natural supports, which being left plain, united the cornice with the architrave, and gave the whole building an elegant lightness of effect which it otherwise could not have.

Polychromy was as great 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 aerolithe and the ephesaliphones statues both came under this 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 Argo, by Polyclus, and the Asclepius at Epidaurus, by Thrasymedes; and others described by Pausanias. It is probable that 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 Tycinus and Polystratus. (De Insign. 5-10.) The colouring was confined to the lips, the eyes, the hair, the drapery, and the ornaments of the dress; the hair was often gilded, as in the case of the Venus de Medicis, and in many statues glass eyes were inserted with eyelashes of copper, examples of which are still extant.

Alluding to this practice, Plutarch 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 Bureunse painted sculptured and enameled and the monuments painted and coloured, or statues on tombs of the middle ages, we shall generally find the practice has been employed to exceed superstition, or
preserves an exact similitude of the deceased. These however are in themselves perverted purposes; the real ends of painting, sculpture, and all the other arts, are to elevate the moral character and enoble the spirit of mankind. The advent of such a period is no less a criterion of the rational determination, and to represent such of our fellow-men as have been benefactors to society, not in the deplorable and fallen state of a lifeless and mortuering corpse, but in the fullness of that life which is called "immortal".

For further information on this subject the following works may be consulted:—Kugler, Uber die Polyichrome der griechischen Architektur und Sculptur und ihre Grenzen; Semler, Beiträge zur Kenntniss der Architektur und Plastik bei den Alten; Quatremère de Quincy, Le Jupiter Olympien; and Stuart's Antiquities of Athens.

POLYCHRUS, Cuvier's name for a genus of Saurians.

POLYCLÉS. There were two sculptors or statuary's 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 Polycle as lived in the hundred and second Olympiad, or about 390 B.C., and was therefore contemporary with some of the greatest sculptors of antiquity, as Cephas, son of Phidias, Praxiteles, and Callimachus. The second was flourishing in the hundred and fifty-fifth Olympiad, or about 170 years before our era. He was the son of Timarchides, a statuary of Athens; but his master's name was Studieus. (Paus., lib. vi., c. 4.)

In the time of this Tritomeus and of his brother Dionysius were sent to Rome with other fine monuments of Greek art. Pliny (Hist. Nat., xxxvi. 5) mentions that a statue of Jove, in the joint production of these two sculptors, was placed in the temple of that god, which was given to the city 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 female derived its great celebrity. It has been called the Borghese Hermaphroditus, from its having belonged to that collection, though it is now in the Louvre—more copies. Pliny (xxxvi. 8) says, Polyclus hermaphroditus wassumptus est. This Polycle the pupil or scholar of Studieus, according to Pausanias (lib. vii., 4), made a statue of Amyntas, a panterist, 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.

POLYCLEITUS, one of the most celebrated statuary's of ancient Greece. This name has given rise to much discussion from the different interpretations in determining how many artists were so called, and what works each produced. Pausanias (lib. vi., 6) speaks of a statue of a youth, says it was the work of Polycleus the Argive; but, he adds, 'not he who made the statue, nor even he who carried the statue, but others, who were at least two Polyclethi, 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., xxxvi. 8) alludes to a Polycleus Sicyonius, contributing to him the works which gained for his author the reputation 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 Sicyonian; or, as is most probably the case, that for a time there were at least two Polycles, 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., xxxvi. 6) speaks of a Polyclus of Sicyon, attributing to him the works which gained for his author the reputation 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 Sicyonian; or, as is most probably the case, that for a time there were at least two Polycles, and that both were natives of or connected with Argos; it may also be assumed that the Polyclus, the more celebrated, was also called Argicus. 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. Polycleus the Sicyonian was the scholar of Ageladas of Argos, and lived for the eighty-fifth Olympiad—an age illustrated by the talents of Ageladas, Myron, Phidias, Alcames, and the brightest names in the annals of art. There is an extensive list of the various admirable productions of Polycleus. Some of these are unquestionably to the credit of the Sicyonian; some may be ascribed to the second Polycleus, but, for the reasons before stated, it is not easy to appropriate them with any certainty. Among the chief works of Polycleus may be mentioned the colossal statue of Juno which stood in the temple at Argos, and which was considered in many respects 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 confined to the drapery and the feet. The dimensions of this statue were less than those of the Olympian Jupiter which Phidias executed for the people of Etes, and of the Minerva of the Parthenon. The goddess was represented seated on a throne; in one hand she held a sceptre; in the other a pomegranate. Some emblems and ornaments, having reference to mythological subjects, were of the richest description and most elaborate craftsmanship. This, taking it altogether, was considered the greatest work of Polycleus, but it was only less celebrated for others of a less ambitious character. Amongst these were two statues of young men, one, called 'Diumeneus,' fastening a band round his head, which was treated in art so soft or delineated so 'motherly that it is 'Dypolchus,' or 'Polyclus,' of a more manly character, 'viriliter, carrying a lance. A group of two naked boys called 'Astragalizontes,' playing at a game called Tali (with bones), is also celebrated; also some statues of Canephele (female figures carrying baskets on their heads), an Amazon, as well as several statues of Athletes (conquerors in the public games), and others. The Canephele were so much admired, that Cicerio declares (in Ver., iv.) that strangers at Messene crowded to see them, and the house was larger than the master's or the ornament or attraction of the whole city. The estimation in which another of his works, the Diumenenaus, was held, may be conceived from the statement of Pausanias, who says: 'You may esteem it a god of the 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, executed in bronze, and represented 12 artists referred to it, and were bound by it as by a kind of law. 'Lineamenta arts,' says Pliny (xxxiv. 8), 'ex eo potentes, velut a leve quSadum.' Some have supposed that this figure was the Doryphorus; and the reason for this belief—and it is a reason derived from the celebrated Lyssippus, who, being asked from what master he had learned his art, replied, 'The Doryphorus of Polycleus.' On the other hand, the manner in which Pliny expresses himself respecting this 'Canon,' would warrant the assumption that it may have been some work distinct from the Doryphorus: In some copies we read 'idem ei Doryphorum viriliter puerum fecit, et quem Canora artificis vocant,' another edition gives the passage thus: 'Diumeneus fecit molliter juvenem . . . ; idem et Doryphorum viriliter puerum. Fecit et quem Canora,' &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 piece of art can properly be considered the production of different qualities and characters can be successfully executed; and it seems much more probable that the canon of Polycleus, whether or not it was the Doryphorus, was really a standard of art which was commercially popular for a work of this particular character. We think this is the interpretation that must be given to it by all practical artists.

It is the highest praise to Polycleus to say he was a worthy competitor 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 Polycleus was preferred. It is also said that he carried to perfection the 'Poseypute art which Phidias had failed, as it were, commenced but was deserted by Pliny to have succeeded olypi (or perhaps it should be read host) in statues of a soft or gentle character. He also says that he first made figures resting on one leg. On the authority of Varro he also acquaints us that he preserved a certain squareness in some of his works, and that they were all made according to one model or exemplar. With respect to the former part of this charge, that of squareness (quadratura), it is likely that the style which characterized his art immediately before what has been termed the Phidian period, may still have been partially continued, and, as Polycleus was one of the scholars of the hard and dry school, it is natural that some of his works may have shown evidence of the but this has been improved upon the character of the earlier art, is proved by the opinion which Cicerio has recorded of the state of style about the era of Polycleus: 'Quis non intelligit Canachi aqua rigida, quae insita est in suum aqua quiescunt, non eum qui quiescunt sum quiescunt; quod indita est in suum quiescunt, sed tanquam mollia quiescant;
nondum Myronis satis ad veritatem adducta ... Pulchriora famen Polycleiti et jam plane perfecta, &c. (Cic., De Clar. Orat., c. 18.) It may be observed here that Myron and Polycleitus were always considered rivals. Pliny says, "monulatio etiam in materiā fuit," for one used the bronze of Xenagia and the other always employed that of Delos for the casting of his statues. The account of Myron's skill is given by Polycleitus the reputation of one of the most remarkable artists of his extraordinary age. Our notice of him has necessarily been much compressed, but a fair estimate of the honour in which he is held as a great master of his art may not only from the record opinions of writers, but from the statement that among his scholars were Pericleus, Canachus (the second), Asopusoros, Alex, Aristides, Phrymo, Dino, Athenodoros, and Denes (Plin., Hist. Nat. 31, p. 122). It is a well-known fact that the production of Polycleitus exists by which the moderns can judge of the merit of this artist.

In addition to his fame as a statue, Polycleitus 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 precinct of the temple of Asculapius, also at Epidauros. It was considered, according to Pausanias, superior, for its symmetry and beauty, to any theatre existing.

The second Polycleitus (Argius) was the brother and scholar of Naucides. It is thought likely that this artist was the author of two celebrated statues described by Pausanias, an Augustus inscribed to Augustus, and a marble statue of Pappos in the museum at Argos (Paus., lib. viii., 31, and ii., 20); as well as of some bronze tripods dedicated at Amyclae. For further particulars respecting works produced by artists so called the reader is referred to Pliny (Hist. Nat.), Pausanias, Juvenius, and Siligii (CataI. Artif.). Em. David, and other writers on antient art.

An ancient epic poem alludes to Polycleitus, a Thasian; but there is no account of him among the artists of antiquity.

POLYCOYLOTENOUS plants are those which have mucous glands. Instances of this occur in the Brasicaceous order, in Lepidium and Schizopetolum; in the Boraginaceous order, in the genus Amsinckia, and especially in Coniforous plants. They are however regarded as analogous, in the latter case, to verticilate 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 Diocytodon type.

POLYCOYLOTENOS (Pams).—

POLYDECTUS, the name given by M. Milne Edwards to a genus of small Brachyurus Crustaceans, placed by him in his tribe Corysti, which tribe, in his opinion, forms a link between the Centomedus and Copepods on one side and the Anurous Decapods on the other. He places Polycleutus between Thia and Corystes. [Corystes, vol. viii.] Example, Polycleutus caldiferus (Pilburnum cupuliferae Linn.).

POLYDONTES, De Montfort's name for a genus of Helicida. The shape of the shell resembles Caracolla, and the nearly circular aperture is surrounded with obtrude tubercular teeth. Mr. Swainson makes it a subgenus of Lucernella, Sw., and places it in his second subfamily Lucerninna (Treatise on Malacology). Example, Polydontes imperator.

POLYDORO VIRGIL (Virgil).—

POLYGALEA SENEGA (Virgian Snake-Root), a perennial plant, native 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 rootlets 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 acid, causing an unpleasant feeling of permanent irritation in the throat. The powder of the root causes sneezing; it promotes a desire of rest, sleep, a vertigo, paresthesia (polygynia), and the acid principle (senegin, which, when isolated, is insoluble in water, but perfectly so when in its natural state of combination with the extractive matter of the plant, and it forms a brown powder of iron and potassium, &c. It possesses very manifest stimulating 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 group. In some forms of indigestion, attended with inadequate secretion of saliva, it is extremely useful, and is permanently serviceable in the chronic opthalmia of struma children, as it promotes increased action of the glands. As a gorgil, it is an efficacious remedy against the hoarseness of a newborn infant.

POLYGALACEÆ are polypetalous plants, with irregular flowers, a definite number of hypogynous stamens, arranged in two paracles; anthers opening by pores, and a simple superior ovary, stigma, style, and ovules. In all Polygalaee proper the corolla is irregular, 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 consists of a single genus, consists of a single plant. In the western parts of Europe and America its qualities are predominant; many of the species are sufficiently beautiful to be cultivated as objects of ornament.

POLYGAMOUS plants are those which have male and hermaphrodite, or female and hermaphrodite, or both female, male, and hermaphrodite flowers on the same or different individuals.

POLYGAMY is the name of the custom according to which a man may have more than one lawful wife at a time, which custom prevails in several countries. Polygamy has existed in Asia from time immemorial, under the old religions, and Mohammedanism adopted and confirmed the custom. Montosequio pretends that polygamy in the East is the constant custom of many nations in that country; but this surmise is by no means proved. Another and a more plausible reason may be found in the premature old age of the female sex in some countries. Niebuhr, in his Travels through Egypt and Arabia, gives an enthusiastic conversation which he had with an Arab on the subject.

The Romans did not practice polygamy, nor did the Greeks. The barbarous nations, on the contrary, that is to say, those who were not Greeks or Romans, practiced polygamy, with the exception of the Germans, *who alone,* says Tacitus, *among all the barbarians, are content with a single wife.* (German. 17.)

In the Orient we find instances of polygamy recorded before the flood. (Genesis, iv. 19.) It was common in the patriarchal times, and we have the instance of Jacob marrying two sisters. By the law of Moses it appears to have been tolerated. (Exodus, xxi. 9. and 10, Deuteronomy, xxi. 15.) But in the time of our Saviour, no indication appears of its being common among the Jews. Repudiation, or divorce, however, was frequent, and our Saviour (Matthew, xix. 9) reproves the custom. St. Paul speaks always of marriage, not implying that any man should take one woman. In Christian countries, Polygamy has been long since universally forbidden, both by the church and by the civil law, under severe penalties, which in some countries amounted to death. In England, it is an offence punishable with a fine and imprisonment for two years, for a married man or married woman to marry another person during the lifetime of the first wife or husband.

The Koran allows a man to have four legitimate wives; but it is only the rich who avail themselves of this permission. The Arabs are generally content with one wife. Polygamy is different from monogamy, or monogamy, which is the institution of a man and woman unsanctioned by any legal ceremony. or legal form.

POLYGASTRICA, one of the two great divisions of Inusorial animalculae proposed by Ehrenberg and adopted by many subsequent writers as a distinct class of the zoophytic division of the animal kingdom. In the 'Cyclopedia of Comparative Anatomy' (article 'Animal Kingdom'), the Polygastrica form the first and lowest of five groups of Cyclozoan animals. This appears to us the best view of the matter.

Enough has been said in the article INFUSORIA of the general results of M. Ehrenberg's long-continued and successful scrutiny of the minute organization of these animated micromeres, with their peculiar habits and the classification which he has proposed, and which has been generally followed, except with regard to the substitution which he makes of Phytosoria for Infusoria.

Class Phytosoria polygastrica.

Swimming animals, without vertebra, apodal, having sometimes a tail, and very often scattered vibratory or rota-
Pol.

Genus Astasia.

B. Distrinct rudimentary eyes.

b. One eye.

* A tail.

Genus Euglena.

** No tail.

Genus Amblypholis

bb. Two eyes.

Genus Distigma.

Section 2. Epitrichia.

Body ciliated; mouth ciliated or nude; no pseudo-pediform prolongations.

Epitrichia nuda.

Fam. 4. Cycladina.

A. Body with vibratory cilium.

a. Cilium in simple rows, longitudinal or circular.

Genus Cyclostomum.

aa. Cilium scattered.

Genus Puntotrichum.

B. Body deprived of cilium, but furnished with hairs not vibratile.

Genus Chetomonas.

Genus Pandorina.

Section 3. Pseudopodia.

Body furnished with variable pseudo-pediform prolongations.

Pseudopodia nuda.

Pseudopodia loricata.

Fam. 5. Amebae.

Genus Ameba.

The envelope dividing with the animal.

A. Free, never fixed.

a. Solitary or agglomeration.

* Envelope oblong.

Genus Navicula.

* Envelope wider than long.

Gen. Enastrum.

aa. United in form of ribands, polymorphous; the individuals of the group have some freedom of movement without becoming detached; cuirass equally thick throughout, and prismatic.

Gen. Bacillaria.

aaa. United in bundles and not polymorphous, afterwards disunited.

Gen. Pragotaria.

aaaa. United in a fan shape, without foot; cuirass thicker in front.

Gen. Echaliara.

B. Fixed when young, afterwards free.

b. Sessile.

Gen. Syndota.

bb. Pedicellated, often dichotomous by ramification; body reduced below, cultriform.

Gen. Gosomonema.

bbb. Pedicellated, often dichotomous; body contracted towards each extremity, subsuiform.

Gen. Coccomena.

bbbb. Pedicellated, united in a fan shape, and often dichotomous.

Gen. Echinella.

Fam. 5. Arellina.

Envelope undivided.

A. Envelope incrustate.

Gen. Diffugia.

B. Envelope scutelliform.

Gen. Arellia.

Vol. XVIII.—2 Z
Legion 2. Enterodela.

Mouth and anus distinct, opening into an intestine, round which are grouped the stomechial vesiculi.

Section 4. Anopisthia.

Mouth and anus contiguous.

Anopisthia nuda.  
Fam. 6. Vorticellina.  
A. Body pedicellated, fixed, afterwards detached, becoming often dichotomous.  
a. Pedicle simple or branched, contracting into a spiral.  
** Pedicle solid, the interior musculature distinct.  
Gen. Vorticella.  
** Pedicle tubular, the interior muscle often distinct, becoming arborescent by the spontaneous divisions of the animal.  
† Animalule of the same group similar.  
Gen. Carchesium.  
✦ Animalule dissimilar in the same group.  
Gen. Zocelidium.  
aa. Pedicle not contracting in spiral, rigid, with no interior tube.  
Gen. Cystobrya.  
B. Body not pedicellated and free.  
b. Cilia in a single crown.  
Gen. Trichiadina.  
bb. Cilia in a spiral row conducting to the mouth.  
Gen. Siendor.  

Section 5. Enantiotreta.

Mouth and anus terminal and opposite, reproduction effected by transverse division.

Enantiotreta nuda.  
Fam. 7. Enchelina.  
A. Mouth terminal, direct, obtuse, generally ciliated; division of the body transverse.  
a. Body not ciliated, nor with hairs.  
** Simple.  
Gen. Enchelys.  
** Double.  
Gen. Diomea.  
aa. Body with vibratory cilia.  
Gen. Holoprya.  
aaa. Body with cilia not vibratory.  
** Subglobular.  
Gen. Actinoprya.  
** Disciform.  
Gen. Trichodiscus.  
B. Mouth terminal, oblique, often ciliated.  
b. Body without cilia.  
* No prolongation of the anterior part.  
Gen. Trichoda.  
** Anterior part prolonged into the form of head and neck.  
Gen. Lachrymoria.  
bb. Body ciliated.  
Gen. Leucoprya.  

Section 6. Allocotreata.

Mouth and anus terminal and opposite, reproduction effected by longitudinal and transverse divisions.

Allocotreata nuda.  
Fam. 8. 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. Lories.  
aa. Front with a ring of cilia.  
Gen. Phleum.  
B. Mouth armed with hooks.  
Gen. Glaucoma.  
Fam. 9. Ophryocercina.  
Anus inferior, mouth terminal.  
Gen. Ophryocercus.  

Section 7. Katotreata.

Mouth and anus not terminal, reproduction as in the preceding section.

Katotreata nuda.  
Fam. 10. Kolpoda.  
Body smooth or ciliated, unarmed.  
A. No eyes.  
aa. A short retractile proboscis.  
** Body partially ciliated.  
Gen. Kolpoda.  
** Body ciliated obliquely all over.  
Gen. Partemium.  
aa. No proboscis.  
* 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 spicule and hooks.  
A. Body hairy, no styles or hooks.  
Gen. Oxytricha.  
B. Body with hooks and no styles.  
Gen. Kerona.  
C. Body with styles and no hooks.  
Gen. Urostylia.  
B. Body with styles and hooks.  
Gen. Stylochola.

Fig. 1.
In illustration of these minute animals, we subjoin figures of Monas atomus as an example of the gastric structure of the Anenterid, and of Leucophyta patula as an example of the Enterodina. The intestinal system of Leucophyta is also given separately. a in each case marks the situation of the mouth, and x that of the anus.

**Fig. 2.**

Leucophyta patula, with some of the gastric cavities filled with food.

**Fig. 3.**

Intestinal system of Leucophyta patula.

**POLYGLOTTS** (πολυγλωττοϛ, from πολύς, much, many, and γλῶττα, 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 Biblia (books), and a Polyglott Bible is therefore called Biblia Polyglotta.

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 Octapla 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 Origines quae supersunt.”

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. Its date is 1501. Since that time various Polyglotts have been published, of which the principal are the following:

1. The Complutensian Polyglott. This was printed at Complutum, the Latin name of Alcala de Henares, in Spain. It was begun in 1502, and finished in 1517, but it was not published before 1522. It was patronized by Cardinal Francis Ximenes [Cunegros], who employed seven learned men competent for the undertaking, and who munificently defrayed the entire expenses 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 supra-linear Latin interpretation of the Septuagint. At the lower part of each 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 Complutensian Polyglott is remarkable as 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.

11. The Antwerp Polyglott. This was printed by Christopher Plantin, at Antwerp, 1569-1572, in eight volumes. 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 did not even look at the money to Plantin, and demanded its repayment in such a manner as to involve him in great distress. The whole of the Complutensian Polyglott is comprised in this of Antwerp, besides another Chaldee paraphrase of a part of the Old Testament, a Syriac version of the New Testament, and the Latin translation of Santes Pagninus, 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 of Pagninus 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 lexicons, 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 Antoine Vitry, 1582-1584, in 10 vols. large folio. The editor was Guido Michael le Jay, who at this time was a layman, but who was afterwards the Secular Franciscan of Cardinal Richelieu; and, 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. In addition there are separate portions of the Bible in seven languages, its pages do not exhibit at a view more than the Antwerp Polyglott. These ten volumes, in imperial folio, present attractions of no ordinary kind. The book-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 Polyclytt was altogether as magnificent a work as can well be conceived.

IV. The London Polyclytt. This was edited by the learned Brian Walton, who became afterwards bishop of Chester. It is in nine volumes, large 8vo, and was published by E. Phillips, and 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. Twisse (Life of Mr. Pococke), "above 3000 pages filled the English Polyclytt Bible, 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 of this kind; and as such works are preserved 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, such as perhaps have come together in no other period during the whole history of our country. One of these men was Dr. Edmund Castell, who published his 'Lexicon Heptaglotton' in 1669, 2 vols. folio. This is a lexicon of the seven languages occurring in the Polygnot, and it has grammars of all these languages prefixed. It generally accompanies the Polyclytt, which can hardly be pronounced complete without it. Walton's work is by no means inferior to the three earlier Polyclytts, but in point of solid usefulness to the biblical scholar it is far beyond anyone of them. The eight volumes form an extraordinary collection of aids for studying the original scriptures. As the London Polyclytt is frequently found in printed form, a minute description of its contents appears to be unnecessary. Its history is recorded at length in Archdeacon Todd's 'Memoirs of the Life and Writings of the Right Rev. Brian Walton, D.D., lord bishop of Chester,' London, 1692, a work which comprises also notices of all Walton's contributors.

V. Bagster's Polyclytt. This work was published by the enterprising bookseller by whom his name is known, in 12 vol. folio, London, 1831. The Old Testament is in eight languages, and the New Testament in nine. Eight languages are exhibited at once upon opening the book. The languages are Hebrew, Greek, English, Latin, German, Italian, French, Spanish, and Latin, the New Testament being given in the last language as an appendix. To these are added the Samaritan Pentateuch in Hebrew characters; the notes and readings of the Masorets; the chief variations of the Vatican text of the Septuagint (which is followed by Polyclytt), and of the Alexandrian text given by Grafe, Oxford; and of the Greek Testament the whole of the selected various readings given by Griesbach in his own edition of 1805. Prefixed to the work are fifty plates in folio, Latin, by William Lee of Newcastle, representing the i. bridge. The types are small, but clear and elegant, and the paper is of excellent quality. The whole volume presents a very handsome appearance.

On the subject of Polyclytt Bibles in general, the reader will be gratified by consulting Horne's Introduction; Butler's Hebrew Bible; Clarke's Biblical Dictionary; Le Long's Bibliotheca Sacra, improved by Morehouse.

POLYGNOTUS, one of the most celebrated of the ancient painters. He was a native of Thasos: son and pupil 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.,) it would seem probable that he flourished at Athens at least as early as the 80th Olympiad (a.c. 460). Thasos was an ally of Athens; taken by the Athenians, after an obstinate contest of three years, in 463 b.c., and it is likely enough that Polygnotus then left his native country, and accompanied his 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 463: if so, it is not improbable that she would have retained sufficient beauty, at a later period, to be introduced by the artist into his painting in the Poecile. 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 transparent 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 tenderness, as well as of pride and stiffness.' (Plin., xxxv. 9.) Polygnotus and Micon were the first artists who employed the 'sil,' or yellow colour found in the Attic silver mines. (Plin., xxxii. 13.) The same painters used a black or blue ground, and their figures, as Pliny says, "were painted in seven languages, all open at one view."

Some of the works of Polyclytt were executed in the encaustic method. (Plin., xxxvi. 11.) Cicero (Brutus, viii.) mentions him as one of the masters who used the four old colours. 'Painting,' Aristotle (Pol., viii. 5) says that one of his pictures, called the Dryopes, was praised for the fidelity and character of his works, and in the 'Poetics' (15) he contrasts this ethic character of Polyclytt with the absence of such a quality in Zeuxis; in cap. 4 he says that Polyclytt made his figures appear already dead, Pausin inferior, and Dionysius similar, to nature. It would follow from all this that Polyclytt held an analogous place in the history of art to that occupied by some of the early Florentine masters in modern painting. Perhaps Fra Angelico or Masaccio would be a fair parallel; always bearing in mind that painting among the anteients was essentially statuiste in its character, and therefore, at an equivalent stage of development, the drawing of the figure would be more characteristic of Polyclytt. The principal works of Polyclytt enumerated by the anteients are—

1. The pictures in the Leache at Delphi, of which Pausanias (xiv. 28. 15) left an elaborate description. The subjects were—"the Capture of Troy, the Return of the Greeks, and the Visit of Ulysses to the Shades." It would seem, from the account of Pausanias, that names were attached to most of the figures, as we see them often inscribed on the vases. The variety of age and sex portrayed, and the feelings of some of the personages, imply a discrimination of character and a power of expression, such as we should expect from the reputation of the artist. Thus Hector was represented seated, flinging his bow and left hand, and with an expression of deep melancholy. Penthesilea appeared to contemplate Paris with contempt and scorn (x. 31). Lucian (imag. 7) mentions the figure of Cassandra, as showing delicacy and beauty of the brow, and the blush of the cheek (κερακός της πετρανίκης και παρυίων τον ερυθράν). A German artist, Riesenhagen, published some designs formed on the description by Pausanias of these works of Polyclytt, and Goethe (vol. xiv., 97) has written an essay on the subject.

2. The Poecile at Athens. The subject probably was the Destruction of Troy. (Plut., Cim., iv.)

3. A painting in a building near the Propylaea at Athens. (Paus., i. 18. 1.)

4. The Marriage of the Daughter of Leucippus in the temple of the Dioscuri at Athens. (Paus., i. 18. 1.)

5. A picture representing Ulysses after the Slaughters of the Suitors, in the temple of Minerva Area at Platea. (Paus., i. 18. 1.)

6. A picture representing Ulysses after the Slaughters of the Suitors, in the temple of Minerva Area at Platea. (Paus., i. 18. 1.)

7. The Walls at Thebom, painted by Polygnotus and restored by Pausiadas. (Plin., xxxv. 11.)

It is very difficult for us to form any distinct idea of what the effect of the works of Polygnotus must have been. From the expressions used by Aristotle, it is probably inferred much calm dignity and an absence of all exaggeration. We must not imagine that they showed the complicated composition, the masses of light and shade, the variety of colour, or the accurate perspective of the best modern masters. An artist sensitive to the tendency of the fading stage, which still retain traces of the severer style of the art united with good execution, will convey the best general notion of the works of such an artist. As in sculpture, no accessories were observed, it is most probable that all was done under the direction of the master; for understanding the story, and essential to the attitudes of the figures. (Sillig, Catalogus Artificum; Müller, Handbuch der Archaeologie und Kunst; Müller, De Vite et Operibus Phidias; Goethe, vol. xiv., p. 97.)
POLYGON. REGULAR. [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. When a solid is added to one of many angles of 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 confine themselves to 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 that.

1. The internal angles of a polygon of \( n \) sides are together always equal to \( n - 2 \) pairs of right angles. See Revolution or 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 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 a square, a pentagon, a decagon, being divisible into 8 triangles, has the sum of all its angles equal to 16 right angles, four of these angles being each greater than two right angles.

To make a rule however which shall connect the angles of any polygon whatsoever, that is, of any figure, however irregular, in which a point returns by a circuit, is a manuscript of a paragraph through which it is difficult to find from whence it set out, would be difficult in the ordinary way of measuring angles. On this subject see Signs.

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, or else four corners and three edges, and so on. If a new edge 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 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 polygonssoever 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 depends upon the last face, and such points or edges, these having being 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 each new 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 shall in every step, it follows that the new faces and corners are the same in number as the new edges and polyhedron. But at the beginning, counting one polyhedron, the faces and corners outnumber the edges and polyhedron by one. Therefore the number of faces and corners is always equal to, that is, the total number of faces and corners 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 centres 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, and 6 quadrangular ones; and a quadrangular 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 dodecahedron (having 15 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 up of equilateral and equiangular faces. [Regular Solids.]

Again, a solid can be formed with 14 quadrangular faces, having 8 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 \( 6 \cdot 8 + 8 \cdot 14 - 2 = 28 \).

Let \( F_1, F_2, F_3 \&c. \) be the number of triangular, quadrangular, pentagonal &c. faces in a solid, and \( C_1, C_2, C_3 \&c. \), the number of triangular, quadrangular, pentagonal &c. corners. Let \( F, C, E \) be the total number of faces, corners, and edges; then we have \( F = F_1 + F_2 + F_3 + \ldots \) and \( C = C_1 + C_2 + C_3 + \ldots \).

Again, since \( 3F_1 + 2F + \ldots \) 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 \( 2E = 3F_1 + 2F_1 + \ldots \) and \( 2E = 3C_1 + 2C_1 + \ldots \).

But \( F = 2 + 2, \) whence we deduce \( 2C = 3E + \ldots \) and \( 2C = 3C + \ldots \).

Hence \( F_1, F_2, \ldots \) and \( C_1, C_2, \ldots \) must be even numbers; for if these be subtracted from the even numbers \( 2C \) and \( 2E \), it will be seen that even numbers remain left: or the odd faces are oddiddy, and also the number of odd angled 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 quadrangular, 2; for every hexagon, 3 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 3 \( F \) nor of 3 \( C \). Hence, neither can be less than \( 6F \) or of \( 6C \). The number of negative, that is, neither of the following can be negative: \( 3C + 2C + 3C = 12 \) negative, \( 2C - 3C = -7 \) and \( 3F + 2F + 2F = 12 \) negative.
quadrangular, or pentagonal faces, and either three-angled, four-angled, or five-angled corners. Call these the essential faces and corners. Hence the following readily follows:

If the essential faces be all triangles, there must be 4 as least, 6 as next, 8 as then, 12 as next, and so on. If all the pentagons, 12 at least: and the same of the corners. If the non-essential faces be all hexagons, or the non-essential corners six-angled, 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.

If all the corners be three-angled, we have \(2E = 3C\), or (8) vanishes. If then all the faces be of sides not exceeding six, we have

\[3F_3 + 2F_4 + F_5 = 12.\]

Similarly, if all the faces be triangular, and the corners nowhere more than six-angled, we must have

\[3C_3 + 2C_4 + C_5 = 12.\]

Hence it follows that when all the corners are three-angled, 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 five or six-angled, the number of five-angled corners can be neither more nor less than 12.

(1) If all the corners be four-angled, we have \(2E = 4C\), or

\[F_4 = 3F_2 + 2F_3 + \ldots\]

whence there must be at least 6 triangles. And similarly, if all the sides be quadrangular, there must be at least 6 three-angled corners.

If all the corners be five-angled, we have \(2E = 5C\), or

\[F_5 = 2F_3 + 2F_4 + F_6 + \ldots\]

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 to fill enclosed space are as follows:—

1. Two \(n\)-sided faces, joined by \(n\) quadrangles. This includes the prism and truncated pyramid, and also every quadrangular hexahedron.

2. The pyramid, with one \(n\)-sided face and \(n\) triangles.

3. The solid with \(n\) quadrangles, and \(2n\) triangles, the symmetrical case of which is a prism surmounted at each end by a pyramid.

4. Two faces of \(n\) sides, and \(mn\) quadrangles, \(m\) being any whole number.

5. Twelve quadrangles so arranged that four of them are placed corner to corner, the figure being finished by four others on each side. When the quadrangles are all equilateral, this is the rhombic dodecahedron.

6. The pentagonal dodecahedron, in which there are two pentagons, each of which has another pentagon on every side, the two figures being placed together so that the projecting angles of the one fill up the re-entering angles of the other.

7. The triangular icosahedron, the conjugate solid of the last, which may be thus imagined. Let a pentagonal prism be surmounted at each extremity by a pyramid, and let the sides of the prism which join the angles of the opposite pentagons, and also a diagonal in each quadrangle, be supposed to be formed of extendable and contractible threads. Turn one of the surmounting pyramids partly round; then the sides and diagonals of the five quadrangles will no longer continue in the same plane, but will form ten triangles, which, with the ten belonging to the pyramids, complete the number required.

When sides and face are given, the polygon itself is not given, unless it be a triangle: thus there is an infinite number of quadrangles which have the same four sides. But it is very remarkable that when a solid is formed of at least six, if not given order of juxtaposition, those for which they form a solid at all, can only form one. This is the reason of the stability of solid figures; were it not for this, a box, for example, would require internal cross-pieces to support the sides. This remarkable property is assumed by the axioms of a definition, and that improperly, since it is a new axiom.

A proof of the axiom implied in the above was given by M. Cauchy in the article already cited, and will be found in the notes to Legendre's Geometry. It is sufficient, but does

pends on considerations foreign to the subject as usually considered.

For the remarkable division of equal solids into symmetrical and unsymmetrical solids, see Symmetrical, for the more general view of the nature of polygons, suggested by modern geometry, see Transversals in the form of Triangle, Regular Figures and Regular Solids, Topography, &c.

To explain the meaning of the term polygonal number [Numbers, Appellations of], let us take as an instance the pentagonal number. Take any pentagon \(AB\), and construct a set of pentagons, \(A_{1}A_{2}B, A_{1}A_{2}A_{3}, \ldots,\) double, treble, \&c. of \(AB\) in linear dimension. Divide the sides of each pentagon into parts, each equal to the corresponding side of \(AB\). Then if we begin with \(A\), which is one point, and afterwards take in all the points of the first pentagon, we have 1, 4, or 5 points. If we now add all the additional points of the second pentagon (including subdivision-points), we have 1, 4, 7, or 12 points. Take in the next pentagon, and we have 1, 4, 7, 10, or 22 points. Hence the series 1, 4, 7, 22, \&c. is called the series of pentagonal numbers; and a set of numbers is thus pointed out which may be as justly called pentagonal as the set 1, 4, 9, \&c. may be called square. It must be supposed that the various sets of polygonal numbers were suggested by the square numbers.

POLYGONAL NUMBERS. [Numbers, Appellations of]

POLYGONAL COURT is a carpet with triangular fruit and usually with stipules united into a tube or ova, through which the stem passes. Their fruit is evidently composed of three asperous carpellary leaves joined by their edges, and surrounding a single erect ovule deriving its origin from a central placenta; and it proves in a striking manner the truth of the modern theory, that in many cases the ovules derive their origin immediately from the centre of vegetation, or the growing point, and not from the margin of carpellary leaves. The order consists of herbageous plants more frequently than of shrubs, and a large part of them are mere weeds; as for example our docks, and wild polygonums; some however are handsome flowers, as the Polygonum Orientale, or Garden Persicaria, and Polygonum tectorum; others are valuable in cooking, as the rhubarb, whose roots also furnish the important purgative drug of that name, and in some a great quantity of astrignent matter is found, as in the Coccoboaus usuous, or sea-aside grape of Jamaica, from which a kind of Kino has been prepared. A species of Indian polygonum, called Tertillum, has recently been introduced into cultivation in Belgium as a substitute for indigo. The flour of the seeds of Polygonum lataricum, Figyopyrum, and others, is made into a good kind of bread in Lombardy and other countries.

POLYGONUM (Zoology). Schumacher's name for a genus composed of those species of Turbinillea of authors with large continuous ribs, so that they look like shells with many angles or sides. Type, Turbinillea polygonus.
POLYGONUM BISTORTA (Great Bistort, or Snake-seed).—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 acrid taste. Roots of plants a few years old should be taken up in spring or autumn. It consists chiefly of tannin, gallic acid, starch, and oxalate of lime. It was formerly given in diseases of debility accompanied with languid or mucous discharges, and like fevers, especially intermittent, for 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 discolored; no pillar; the aperture angulated and margined, and a small tooth on the inner lip.

Mr. Swainson, whose description this is, makes Polygyra a subgenus of Licerionella. (Treatise on Malacology.)

Example, Polygyra septemcosta (Sow. 'Conch. Man.', fig. 383.)

POLYHALITE, a mineral which occurs crystallized and massive. Primary form of the crystal a right rhombic prism. Fracture uneven. Hardness sufficient to scratch carbonate of lime. Colour brick-red, pale flesh-red, and yellowish. Lustre resinous. Opalescent. Specific gravity 2.76. In the flame of a candle it melts into an opake 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>Specific Gravity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulphate of lime</td>
<td>44.74</td>
</tr>
<tr>
<td>Sulphate of magnesia</td>
<td>27.70</td>
</tr>
<tr>
<td>Chloride of sodium</td>
<td>20.04</td>
</tr>
<tr>
<td>Peroxide of iron</td>
<td>0.34</td>
</tr>
<tr>
<td>Water</td>
<td>5.92</td>
</tr>
</tbody>
</table>

POLYHEDRON. (Polygoon and Polyhedron.)

POLYHISTOR, ALEXANDER, a native of Ceylon in Phrygia, according to some, and of Miletus according to others, was a geographer and historian, who lived in the seventh century of Rome, and was taken prisoner by the Persians. This fish, called by the ancients Plathodon, but purchased by Cornelius Lenticus, 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 teacher. When at Rome, and had a country-house at Laurentum, which having taken fire while he was there, he perished in the flames. He is often mentioned and quoted by Pliny the Elder, Diogenes Laertius, Clemens Alexandrinus, and Rusebius, 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, Phrygia, Lydia, Caria, and others. Clemens Alexanadrinus quotes his treatise on the Jews, of which Eusebius has inserted fragments in his 'Chronography.' Clemens Alexanadrinus mentions another work of Polyhistor, on the 'Symbol of Pythagoras;' and Oryt 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. (Solinus.)

POLYLÉPAS, M. de Blainville's name for the genus Sculpitum of authors. (Crepidib. vol. v. p. 205.)


It is found in imbedded crystals at Frederiksværn in Norway.

Analysis by Berzelius:—

<table>
<thead>
<tr>
<th>Substance</th>
<th>Specific Gravity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tannic acid</td>
<td>49.3</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 manganese</td>
<td>2.7</td>
</tr>
<tr>
<td>Zirconia</td>
<td>14.4</td>
</tr>
<tr>
<td>Ytria</td>
<td>11.5</td>
</tr>
<tr>
<td>Lime</td>
<td>4.2</td>
</tr>
<tr>
<td>Magnesia, potash, silica, and oxide of tin</td>
<td>traces</td>
</tr>
</tbody>
</table>

POLYMERNU'S. [FORAMINIFERA, vol. x, p. 348.]

POLYMERNU'S, a genus of fishes, placed by Cuvier in his third division of the Periode, the species of which are distinguished by the spots in the fins being darker and clearer than the pectorals. These fishes are further distinguished by having several longitudinal 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 Polymerinus 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 Scorpaenidae which these fishes appear to approach in some of their characters.

Considerable interest is attached to the Polymerinus 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 (1838) of Parbury's "Oriental Herald," says this naturalist, "appears a letter on the Sulehah fish of Bengal, and the isinglass it affords," this fish, being an anonymous writer, when at its full size, attains about four feet in length, and is equal in form, resembling the shark species in appearance, but exhibiting a more delicate structure. The meat of this fish is said to be good, and 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 Sulehah may be considered the most valuable part of the fish; it is exposed to the sun and suffered to dry, becomes purely pellucid, and so hard, that it will repel the edge of a sharp knife when applied to it. These bladder vary from half a pound to three-quarters of a pound in weight, and are frequently found in the oxtails, 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 Sulehah 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 Polymerinus Sale of Hamilton's 'Fishes of the Ganges:'* he 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 (11.12s.) per pound.

Thinking it highly probable that other species of Polymerinus besides the S. Sale will yield isinglass, Dr. Cantor proceeds to give a short account of those 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 Polymerinus Risus of Hamilton ('Pol. longifiss. Cuvier; the Tupse, 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 even higher up than 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 does not exceed eight or nine inches when cut out, and a half or two inches in depth. It is remarkable for the great length of 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, 1839.
in number on each side. *Polyenmus curvus* and *P. Topoisi* of Hamilton, Dr. Cantor states, are closely allied to this species. *Polyenmus Sete*, Hamilton (*P. plebeius*, Broussonet*; P. lineatus*, Lacépéde), is the Sulean fish mentioned in Parbury's "Oriental Herald," the same which Mr. McI. Nuttall 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. Sulphata* (Saccollu), 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 *Polyenmus*, *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.t It appears that this species (which is in all probability the *Pentamutes* of Artedi, on which Linnaeus established his *Pis. quinquaria*) 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 *Polyenmus* with so few as five free rays, and those longer than the body, imagined that the *Pis. quinquaria* 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.

*Polyenmus 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 *Polyenmus quadrifilis*.

*Polyenmus quadrifilis*, Cuv., et Va...

In the American *Polyenmus* (*P. Americanus*) 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 the zoological groups of the Archipelago. When the many species of the genus *Arca* 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 word. Under the name of the German, the French, and the Spanish Polynesia. Under this name the French geographers comprehended not only the several groups of islands which occur in the Pacific, but the whole continent of Australia, and 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 appendance of Asia, the name of Polynesia, in this extent of significa-
tion, 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 Philip-pines, 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 as part of that continent, as Juan Fernan-des, 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. Among these 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 Admiralty Islands, New Ireland, with New Hanover, New Britain, Louisiade, New Georgia Archipelago, New Char-lotte Islands, New Hebrides, New Caledonia, Viti Islands, Friendly Islands, Navigator's Islands, Society Islands, Marquesas Islands, Pamuto Islands, and the isolated Easter Island; to these see the Eastern Islands, a group comprising the tropic, Pitcairn's Island, Norfolk Island, and the islands of New Zealand. North of the equator are the Pélew Islands, the New Phillipines, the Ladrone, the Ralik, the Radeck, 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, quadri-nomials, &c., or expressions of two, three, four, &c. terms. The polynomial theorem means the theorem by which 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.

**POLYODONTAL ("many-toothed tribe"), a name applied by Lamark and M. de Blainville to the *Arcoidea* of the former, the *Artocerei*, &c. of collectors, comprehending the forms collected by Linnaeus, in his "Systoeme Naturae," under the genus *Arcoidea*. He designated by this name modern zoologists as the genera *Arca*, *Cucullaea*, *Pectunculus*, and *Nucula*. Lamark's *Arcoidea* constitute a part of his *Conchifere Temnopedes*, and are arranged by him between the *Cardioide* and the *Trigadenes*.

De Blainville places his family *Polyodontal* or *Arcoidea* between the *Mytilaceus* and *Submytilaceus*. Lamark 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 Lamark, that the greater number of conchologists consider the family to be very natural, and not requiring any alteration, the relation-ship between the genera being evident, and especially between *Cucullaea*, *Arca*, and *Pectunculus*; whilst the diff-erences existing between them are of so little importance that the union under one natural genus may be well adopted. *Nucula* indeed does not appear to be so well connected with the preceding genera; for the *Nuculae* are nacreous, a condition not observed in the others. The hinge teeth too of the *Nuculae* have a different form, and they are in general much more strongly constructed than the *Arcoe* and *Pectunculus*; 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 which in the ligament is external, in the transverse veins, and these species are not nacreous. M. Deshayes suggests that it may be convenient to withdraw these species from the genus Nucula, to place them among the Arca and the Petricola, and thus separate them from the family of the Arca, which would be then well characterized 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 of the Astrolabe," of the animal of a Nucula placed beneath the tibia of a Triangulum, 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 organization approaches the Trigonia more than the others.

M. Rang makes the Arcae consist of the genera Cuculina, Arca, Pectinula, 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, equalvate, 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 uniting 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 Cuculina, Arca, Pectinula, and Nucula. Trigonia will be treated of under *Trigonia*.

### Cuculina (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 slat longitudinally.

*Shell* thick, globular, equalvate, 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 auricular border. (Rang.)

M. Deshayes remarks that the Cuculina 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 Cuculina from the Arca are the transverse ribs placed at the extremities of the hinge, which ribs articulate together like the teeth of the in. He adds, have not the calcariform teeth upon a straight line; for this line in some species is curved at the extremities, and then the teeth become oblique, and in some species transverse: such species are closely approximated to Cuculina in the hinge. Upon these grounds M. Deshayes is of opinion that the *Cuculina* 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 in detail, when we come to treat of Arca proper so-called, made Cuculina one of the subdivisions of that genus.

The number of recent species of Cuculina recorded by M. Deshayes in his tables is one only; nor are any more noticed in the last edition of Lamark.

This species is the Arca concomerata of Martini, Arca Cucullata of Gmelin, Arca cucullata of Chemnitz, and Cuculina auriculiformis of Lamarck, under which last name it is generally known; but M. de Blainville, who has made known several species, Martinis 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 seen better from the subjoined cut than from verbal description. The longitudinal striæ are more marked than the transverse striæ. The colour is rather a deep cinnamon-brown externally, and internaily on the anterior part brown tinged with violet.

*Locality.*—The Indian Ocean; sandy bottoms.

P. C., No. 1146.

---

*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 slat throughout its length.

*Shell navicular,* rather thick, equalvate, 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 laminae, which are equal and inract; ligament entirely external.

M. Rang, who gives the above as the characters of 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 Lamark, observes that the organization of this genus has been well known since the publication of the great work of Poli, "Testacea utroisque Speim," where he has demonstrated the anatomy of Arca Noz.; and that it were to be wished 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 abdominal mass 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 Conchifera, and which serves both for attachment and also as a sort of operculum to close the gaping of the valves into which it passes. On each side of the body may be seen, nearly throughout the length of the animal, two branches, 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 buccal 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 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 Arce, 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 branchia very distant at their insertion upon the lateral parts of the body, there is a ventricle and an auricle for each pair of branchia, 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. Deshayesadds, that if this organization be compared with that of the Pectunculida, 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 Arce which have no byssus were known.

M. de Bisanville divides the Arce into the following subdivisions:

A. (Les Navicules.)

Navicular species; the hinge completely straight; the foot tendinous and adherent. (Byssosarcæ, Sw.) [Byssosarcæ.]

Example, Arca Novæ.

B. (Les Biostourmes—Genus Triis, Oken.)

Example, Arca tortuosa.

C. (Genus Cuculla, Lam.)

Navicular species; the hinge completely straight; the terminal teeth much longer and more obtuse than the others.

Example, Cuculla auriculiformis, Lam.

D. Species with a straight hinge not notched or not gaping inferiorly.

Example, Arca barbata.

E. (Les Rhomboidæ.)

Species well closed, of less elongated form, more pectinoid, and with a straight hinge.

Example, Arca rhombæa.

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 mytiloidea.

The number of recent species recorded by M. Deshayes, in his Tables, is forty-three, and of those Arce semilunæ, Novæ, tetragona, umbonata, barbata, Magellonica, Helbingiti, antiquata, rhomboïdea, clathrata, a new species, Gavardi, and Querci, 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 Novæ.

Description.—Shell oblong, striated; apex emarginate; umbones very remote, incurred; margin gaping.

Locality.—Atlantic Ocean, seas of Europe.

Arca tortuosa—Genus Triis, Oken.

Description.—Shell twisted, parallellipped, striated; valves obliquely carinated; umbones small, recurved.

Locality.—The Indian Ocean.

Arca antiquata.

Description.—Shell transverse, obliquely cordate, ventricose, many-ribbed; the ribs transversely striated and blunt; the posterior ribs bifid. Colour white.
since the time of Linnaeus two species at least have been
confounded under the denomination of Arca 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 Arca antiquata, and he cites the
following figures of the shell:—Gault. Text., pl. 87, f. C;
Chenm. Conch., t. viii, 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-
marek 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 Arca dilatata. Neither,
in his opinion, is the Arca antiquata of Brocchi a true
antiquata, but the Arca dilatata, the fossil analogue of the
species figured by Poli.

A r c a antiquata.

Habits of the Genus.—The Arca have hitherto been
found 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, equivalve, subequilateral,
entirely closed; umbones rather small and more or less
distant; hinge formed of a curvilinear row of small narrow,
rather numerous, intransit teeth, which are often incomplete
under the umbones; ligament external. (Rang.)

Habits of the Genus.—The Pectunculus 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
Pectunculus differs from that of the Arca, in others great
analogy exists. The Pectunculus, 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 branches are formed of long filaments, as in the Arca;
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 branchia. The esoph-
agus is long and narrow, and has no horny styllet; it
terminates in a pyriform stomach, from which comes a
slender, cylindrical, and very long intestine, which, after
having made many circulations, arrives at the median
and dorsal part of the animal, passes behind the posterior
adder 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
branchial filaments.

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 glycerinus,
pilosus, violascens, and nummarius. The number given in
the last edition of Lamarck is twenty; but the nine
species named and described by Mr. Broderip and Mr. G.
B. Sowerby respectively, from Mr. Cuming's collection
(Zool. Proc., 1822; Müller, Synopses), are omitted.

Example, Pectunculus pilosus.

Description.—Shell orbiculate; oval, tumid, marked
with decussate striæ; umbones oblique; epidermis brown,
hairy.

Localities.—The Mediterranean and the Atlantic Ocean.
(Lam.)

Nucula, Lam.

Generic Character.—Animal rather thick, subtriquetrous,
having the mantle open only in its inferior moiety, with
tertiary 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 digitations.

Shell rather thick, sometimes nacreous, subtriquetrous,
equivale, 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
umbo; ligament in great part internal, short, and inserted
in a small oblique fossa 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

3 A 3
N. cuneata from fourteen to forty-five fathoms; N. obliqua from fourteen to sixty fathoms; and N. Pinnata from seven 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 Arcas. The foot is compressed laterally, and slit at its free border, so that it can be dilated into a disk for creeping progression. The mantle-lobes are disjoined throughout the length of their inferior border. The abdoidal mass is not thick, and the foot is attached to it throughout its length; on each side and above are found the branchiae, 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 Arcas and Pectunculi.

In front of the abdoidal mass, and near the anterior adductor muscle, is the mouth, on each side of which is a pair of palp, very narrow and very much elongated on each side of the visceral mass; these palps are foliaci on their internal surface. The internal organization does not appear to be known; but M. Deshayes is of opinion that it may be predicated to bear much resemblance with that of the Pectunculi.

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 Mr. 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 obliquely ovate, trigonal, rather smooth; cardinal teeth straight, acute; margin crenulated.

Example, Nucula margaritacea.

Description.—Shell obliquely ovate, trigonal, rather smooth; cardinal teeth straight, acute; margin crenulated.

Nucula rostrata.

Example, Nucula margaritacea

Description.—Shell obliquely ovate, trigonal, rather smooth; cardinal teeth straight, acute; margin crenulated.

Example, Nucula margaritacea

1. Interior of valve, showing the teeth on each side of the hinge and the carination of the shell, one cellular line, two cellular lines, three cellular lines, four cellular lines.

2. Exterior of a valve, showing the umbones.

Fossil Arkade.

Cucullaea. Mr. G. B. Sowerby ('Genera') notes the fossil species as numerous; of these, he observes, one (Cucullaea cressonii) 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. Mantell, in his 'Tabular Arrangement of the Organic Remains of the County of Sussex,' notes a Cucullaea in the chalk marl, and adds that M. Brongniart sent him a similar cast from Rouen; also Cucullaea decussata, from the Shrinkin sand (Faversham).

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 cylindrica 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 angula (Bolland). ('Illustrations of the Geology of Yorkshire.') Dr. Filton, in his 'Sirisigraphical and Local Distribution of Fossils,' in his valuable paper 'On the Strata below the Chalk' (1839), notices the following Cucullaea, cancellata (Blackdown); costellata (lower green-sand, Kent; Blackdown, Devon); decussata (upper green-sand, Isle of Wight); sans vertébres (lower green-sand, Kent); Blackdown; diosora (Blackdown, Devon); formosa (Blackdown); glabra (upper green-sand, Isle of Wight); lower green-sand, Kent; Blackdown; glabra (lower green-sand, Sussex); doublia (upper green-sand, Hampshire); low 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 Warminster). Mr. Murchison ('Silurian System') describes and figures Cucullaea antiqua from the old red-sandstone (middle and lower beds only) and the upper Ludlow rock; Cuc. candidus from the upper Ludlow rock, with a ?; and Cuc. oculata from the red sandstone (middle and lower beds only). Professor Sedgwick and himself had previously given Gosau as a locality for Cucullaea cancellata. (Structure of the Eastern Alps.)

Ara. 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. Mantell men-
tions two or three undetermined species from the chalk
marl (Ringmer), and Arca carinata from the flint or
upper green-sand, Southbourn, Sussex, and Devizes); and
another (a very imperfect cast) from the gault or Folkstone
marl at Bainham (Bainham Bay, Isle of Wight); and
Ammodiscus and masculinity from the coraline oolite, Yarmouth; Mr. Lonsdale notes an Arca from the inferior oolite (canal
banks opposite Limpsley Stoke), and another from Frome;
also one from their fessor (Liggivick), and Mr. Murchison record one from Gosau. Dr. Fitton gives
Arca carinata from the upper green-sand, Hampshire; A.
rottundata from Blackdown, and an uncertain species
from the lower green-sand, North Wits, the Portland stone,
and the lowest stratum of the Lambourn. Mr. Murchison ('Silurian System') describes and figures Arca Eastnort from the Wenlock shale.

*Pectunculus.* Mr. G. B. Sowerby ('Genera') states that all the species known to him are found either in the Lon-
don clay or the calcareous gosiers; he says that a very near one occurs in the indurated marl at Bognor, where it is accompanied by fossil *Fissure, Lingula,* &c., and he has figured it, believing it to be a variety of Lamark's *Pectunculus pectinatus,* 'but in truth,' he adds, 'it is so difficult to fix the characters of the species of this genus, that we dare not speak decidedly upon this point.' M. Deshayes enumerates, in his Tables, twenty-seven fossil species, which he gives names to, as a separate genus, mentioned, as both living and fossil (tertiary). In the last edition of Lamark but fifteen species, fossil only, are catalogued. Dr. Mantell notes *Pectunculus pectinatus* from the Lower Oolite, and *Pectunculus minor,* the oolite; and *P. decussatus* from the arenaceous limestone or sandstone of Bognor. Professor Sedgwick and Mr. Murchison enumer-
ate Pectunculi Plumasiideni, brevirostris, pectinata,*
*Pectunculus* and *Bivalcca* from the Gosau deposits; and Mr. Lee describes and figures *Pectunculi Broderi,' minor, delto-
deus,' ellipta, and obliqua from the Cliffe beds (tertia-
\r

ry), Alabama.

The number of fossil species (tertiary) published in the Tables of M. Deshayes is twenty-three, and four are enumerated as both living and fossil (tertiary). (See above.) In the last edition of Lamark only seven are catalogued as fossil only. Dr. Mantell notices *Nuclea ovata* from the gault or Folkstone marl; and *Nuc.
*impressa* from Blackdown. Professor Phillips records *Nuclea ovata* and *subcurvata* from the Speeton clay; *subcurvata from the inferior oolite; another from the coraline oolite; *ellipta* and *nuda* from the Oxford clay; *variabilis* and *lachryma* from the Bath and inferior oolite; *axiniformis,* inferior oolite; *ovum* and *complanata,* upper lias; *cuneata,* *tumida, undulata,* *clasforma* and *Luciniformis* (Bolland, &c.) as living near the river Marine, North Devon. Mr. Lonsdale notes *Nuclea pectinata* from the Bradford clay; and another from the forest marble. Professor Sedgwick and Mr. Murchison give us *Nuclea angulata* and *concava* in their list of Oolitic Fossils. Dr. Fitton describes *Nuclea angulata* (Blainville); *Nuclea antquata* (lower green-sand, Sussex, and Blackdown); *apicu-
data* (Blackdown; breviga (gault, Kent, impressa)
(lower green-sand, Sussex, and Blackdown); *innata* (Black-
down; obtusa (Blackdown); *ovata* (gault and lower green-
sand, Kent); *pectinata* (gault, Kent, Cambridge. South Wits, Blackdown, Devon); and *undulata* (gault, Kent, and another (gault, Bedford).

Mr. Murchison figures and describes *Nuclea* *ovata,*
*ovata* and *laxa;* the first from the upper Ludlow rock, the second from the Llandeilo flags. ('Sil. Syr.) Mr. Lee describes and figures *Nuclea Sedgewicki,* ovata, pectuncularia, *Brong-

nachus, praestentia, magnus, carcinfera, plana,* and *zeman,* from the Cliffe beds, Isle of Wight.

**POLYCE.** The discoveries of Trembley regarding the structure and animal functions of the phlooid Hydrea, and Plumactilis of fresh water, opened a new field of research in the science of life, and threw much light on many parts of life, and gave occasion for much correct inference and baseless conjecture. Borrowing from Aristotle and Pliny the term Polypus, by them applied to a cephalopod, the system followed by Blainville 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 'fucera,' bases, *Dr. M'Intosh observes that, as it differs from the recent *F. decussata,* different specific name should be found for it.*

or axes, which remain after desiccation or decay of the softer parts, generally agreed in opinion that all these plant-like bodies were associated active living animals like the *Hydrea* described by Trembley.

As in a tree 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 Polybiy expand-

Dr. M'Intosh observes that, as it differs from the recent *F. decussata,* different specific name should be found for it.

or axes, which remain after desiccation or decay of the softer parts, generally agreed in opinion that all these plant-like bodies were associated active living animals like the *Hydrea* described by Trembley.

As in a tree 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 Polybiy expand-

Dr. M'Intosh observes that, as it differs from the recent *F. decussata,* different specific name should be found for it.

or axes, which remain after desiccation or decay of the softer parts, generally agreed in opinion that all these plant-like bodies were associated active living animals like the *Hydrea* described by Trembley.

As in a tree 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 Polybiy expand-

Dr. M'Intosh observes that, as it differs from the recent *F. decussata,* different specific name should be found for it.

or axes, which remain after desiccation or decay of the softer parts, generally agreed in opinion that all these plant-like bodies were associated active living animals like the *Hydrea* described by Trembley.
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. Frère (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." [POLYPHIAM; ZOOPHYTARIA.

POLYPH'HYLIA. (MADREPHYLLEA.)

POLYPHY'TA, the genus formed by Lamouroux for a marine plant-like body allied to Coralina. (PSEUDOCORALLIA.)

POLYP'RIA. In subdividing the Linnaean Zoophyta, naturalists have generally recognised the propriety of separating in one distinct class the compound, plant-like, generally polyphyleous animals; Lamark, Lamouroux, and Cuvier agree in this. Blainville's system of classification employs the term Polypiria for one of several related classes (procured by dismemberment of Lamark's Polyp'), and divides it into four important subclasses, viz. Polypiria solidis, Polypiria membranacea, Polypiria dubia, Polypiria 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, MILLERITEE and TURBINELIDE; and for some general views of the classification of Polypirian animals to POLYPE and ZOOPHYTARIA.

The active animal parts of the Polypiria 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, agglutinated together. The subclasses are thus defined:

Polypiria solidis. Animals contained in small calcareous cells, with a terminal opening, accumulated into a solid fixed polyparium. Ovaria internal?

Fam. 1. Milleporeidae.

Fam. 2. Tubuliporidae.

Polypiria membranacea. Animals very short, unciliated, provided with many tentacula (often ciliated) in one row, contained in membranous, rarely calcareous, adherent cells, with a more or less bilateral opening. Ovaries external.

Fam. 1. P. operculifera.

Fam. 2. P. cellaria.

Fam. 3. P. securaria. Polypiria dubia. Animals urceiform, provided with long (often ciliated) tentacula, arranged in a serpulentiform form above and around the opening of the mouth, and springing from a common membranous basis. (Zoophyta ascidioida; Fam. Lamintiidae, Johnston.)

Polypiria nuda. Body gelatinous, very contractile, free, excavated into a gastric cavity, of simple form, provided at its entrance with cirrhose tentacula; no trace of visera; reproduction by external germs. (Part of Zoophyta hydroïda of Dr. Johnston.)

POLYP'HRIA MEMBRANACEA.

Fam. 1. Operculifera or Escharicera. 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 Zoonhya ascidioida.) Milne Edwards calls them Bryozoa. They belong to Dr. Frère's Glioibrachidiat.)

Fam. 2. Myriapora. Animals cylindrical, terminating anteriorly in a tubular extensile proboscis, surrounded by many simple tentacula, arranged into the shape of a funnel; on one side of this body is a cartilaginous round operculum. Cells simple, one with a small round opening united into a calcareous, fixed, ramified, finely porous polyparium.

Example, Miliepoëra truncata, Linn. (recent). Soll. and Ellis, tab. 23, f. 1-5.

Blainville includes in this genus several Celleporas of Linnaeus, 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.

Milne Edwards has proposed to divide the genus into three, according to the structure of the cells (Ann. des Sci. Nat., 2nd series, tom. vi.):—

Eschara, 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 cells.

Escharina, in which the cells, juxtaposed, circumscribed, the exterior 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 coral 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 Eschara, between the two layers of the cells.

Example, Flustra lanceolata, Goldfuss. (Péret, tab. 37, f. 5.)

Diastophora (fossil), Lamouroux. Animals unknown. Cells rather tubular, with round opening, disposed irregularly in vertical rows on each face of a lamelliform, irregular, variously expanded polyparium.

Example, Diastopora foliacea, Lam. From the solite of Caen.

Ocellaria (fossil), Ramond. Animals unknown. Cells rounded, elevated in the middle, and united in quinque on the two faces of a stone, subquadrate, 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, uniform, operculated opening, closely united quincunxially on the two faces of a foliaceous polyparium connected with an articulated stem.
Example, Adeona foliisera, Lamarck. Blainville, pl. 76, f. 2.

Adeona foliisera.

Mezenteporina, Blainville.

Animals unknown. Cells distinct, oval, oblique, rather prominent, with a subterminal oblique opening; ranged regularly in quinexux in two series, united so as to form a fixed calcareous polyparium, composed of convoluted expansions radiating from the point of attachment.

Example, Mezenteporina oblinula (Echura of Lamarck). There are fossil species from the oolites of Cam and Bath.

Reopeora.

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), Reopeora cellulosa. Ellis, ‘Corallines,’ t. 25, d. D.

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 infundibuliform) 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 two or three times the diameter.

Example, Fenestella prismatica. Lonsdale, ‘Silurian System,’ pl. 15. 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 form, arranged in reticulation on the surface of convex imbricate plates round a hollow axis, so as to form a fixed irregularly subcylindrical polyparium.

Example, Verticillipora erecta (Defrance). Blainville, t. 66, f. 1. From the chalk.

(To this rather obscurely characterised genus Mr. Lonsdale assigns a species from the Silurian rocks.)

Dactyliopora (fossil), Lamarck.

A regular cylindrical tubular body, rounded at both extremities, with a round orifice at one margined by a fixed lip or border, and an inner surface reticulated by numerous infundibuliform holes, the partitions between which are pierced by pores supposed to be orifices of the polypiferous cells.

Only one species of this singular and elegant coral (if such it be) is known, viz. D. cylindracea, from the tertiary strata. Blainville, pl. 72, f. 4.

Conipora, Blainville.

An obovoid or pyriform hollow body, composed of a thin crust pierced by many quadrangular holes arranged in quinexux.

One species, Conodictyum dictatum, Goldfuss (tab. 37, f. 1). From the Jurakalk of Baireuth.

Ovalites (fossil), Lamarck.

An oviform or cylindrical hollow body perforated at each extremity, and covered by scattered irregular, polygonal, very fine pores.

Lamarck, who constituted the genus, describes two species, O. marginalis, and O. elongata, both from the tertiary strata of Grignon.

Polytrypa (fossil), Defrance.

A subcylindrical fistulous mass, perforated at each extremity, and pitted and pitted within and without with round pores (the openings of short cells) very closely set, and arranged in rings, especially on the inner face. (Allied to Dactyliopora.)

Example, Polytrypa elongata, Defrance. From the tertiary strata of Valognes. Blainville, pl. 73, f. 1.

Vanginopora (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 quinexux, 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 Paros.)

Larvaria (fossil), Defrance.

A cylindrical, ovoidiform, fistulous body, composed of cellulosiferous grains arrayed in rings, and leaving between them circular rows of round pores which penetrate through the mass to the interior cavity.

Example, Larvaria reticulata. Defrance, from the tertiary strata of Grignon. Blainville, pl. 71, f. 3.

Palmularia (fossil), Defrance.

A fixed oval 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 delimitate the border.


Concerning the genera Palmularia, Larvaria, Vanginopora,
Polytrypa, Orulites, Conipora, Daetlyopora, it is to be remarked that doubts have been expressed as to their really belonging to the Polyziaria at all. The discussions on this subject in Blainville’s ‘Actinologie’ do not entirely clear up the subject.

Cellepora, Lamarck.

Animals provided with eight simple tentacula and two openings to the intestinal canal. Cells complete, circumscissed, uncocelated, with a round operculated terminal opening. The polyzarian which they form by their irregular accumulation is of a spongy and porous consistence, and appears either encrusting other bodies or rising into fleshy masses like a medusoid.

Example, Cellepora pumicosa, Linn.

Collegrove Fossil.

Goldfuss mentions many fossil species, from the antient as well as most recent strata.

Cadosus, Saviogny.

Polyzarian orbicular, lagecidental, plano-convex, pierced above with central and scattered pores.

Example, Cadosus imbifurcatus.

Berenices, Lamouroux.

Animals unknown. Cells submembranous, 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 Cellepora, proposed by Lamouroux.

Example, Berenicea diluviana. Fossil from Caen. (Lamx., ‘Gen. Polyp.,’ tab. 82, f. 1.)

Discoarca, Lamarck.

Animals unknown. Cells complete, prominent, more or less with a round terminal operculated opening. The polyzarian found by their union in one series is a very small and thin crust.

A subdivision of Cellepora proposed by Lamarck. (Example, Discoarca verrucosa, Lamarck.)

Membranopora, Blainville.

Animals hydrozont. Cells circumsissed, not prominent, covered above by a thin fuggious membrane in which the round opening is pierced. The polyzarian formed by their union is membranous, and spreads in a lamina on the surface of marine bodies.

Example, Flustra membranacea of Linneaus.

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 Cellepora are referred to this genus by Blainville.

Fam. 2. Cellararia.

Animals hydrozont, separate, distinct, with very fine tentacula. Cells oval, depressed, membranous with a bilateral opening which is not terminal. The polyzarian which they form by their union laterally or in two rows, is membranous, and fixed; (ovaria external?) no operculum. The Linnean genus Cellaria is the type of this family, which ranks with the Zoophyta Ascidioidea of Johnston, and the Chloobrachiata of Farre.

Genera.

Lunulites (fossil), Lamarck.

Cells in one series arranged in concentric circles on divergent radial openings being on one (the upper) surface. Polyzarian regular, orbicular, convex above, concave below. (In the typical species the concave side is radiated.)

Example, Lunulites radiata, Lamarck. 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 semiannual opening, and united in a verticle form round some other body, or in spike-like branches. (Closely allied to Flustra.)

Example, Flistra verticillata, Linn. Lamouroux, ‘Polyp. 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 membranous part, in which is a subterminal transverse opening. Arranged in quinence, the cells unite to form a membranous flexible encrursting or frondescent polyzarian.

This great genus is divided by Blainville into four sections, viz.:

1. Encrusting, 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. carabinae. Nettled, lobed, with one series of cells, as F. acuiculae, F. setaceae, &c.

There are fossil species from the tertiary and perhaps older strata.


Admirable figures of Flustra pilosa are given by Mr. Lisler, in the ‘Phil. Trans.’ for 1834.

Eierina, Lamouroux.

Animals unknown. Cells rather large, elongate oval, subhexagonal with raised margins, which support a membranous expansion, in which a sigmoidal aperture appears. By a quinenceal and at the same time circular arrangement of the cells, a branching dichotomous fixed membranous polyzarian is formed.

Example, Eierina, Blainville. From Australasia. Blainville, pl. 80, f. 2.

Pharuna, 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, flabeliform, fixed polyzarian.

Example, Flistra tubulosa, Ellis. Lamouroux, ‘Polyp. flex.’, pl. 5, f. 29, c.

Vincularia (fossil), Defrance.

Cells oval, subhexagonal, regular, with a subterminal semiannual opening; united longitudinally in several rows, they form a slender brittle polyzarian (en forme de baguettes).

Example, Vincularia fragilis, Defrance. Blainville, pl. 67, f. 3.

Goldfuss, calling the genus Glauconome, describes two other species from the tertiaries of westphalia, and one (probably not congeric) but really allied to Fenestella from the transition strata.

Cellaria.

Animals with an elongated contractile proboscis, a circle of twelve tentacula, and an internal ovary. Cells regular (hexagonal or oval), with a transverse (subtubular) opening, arranged circularly in quinence on the surface of the cylindrical dichotomous articulations of a subcalcareous plant-like polyzarian, 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. 23. (Flourens makes it his genus Farnia.)

Section 2, with oval cells, and tubular opening.

Example, Cellaria ceroides. 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 polyzarian, formed of cylindrical branches irregularly Anastomosed.

Example, Intricaria Bajoensis, Defrance. From the oolites of Bayeux. Blainville, pl. 86, f. 1.
Canda, Lamouroux.

Animals unknown. Cells not prominent, rigid, subcere- taceous, arranged in two alternate rows on one face of the branches, which are dichotomous, articulated, united by transverse fibres, so as to form a flabelliform polyparium.

Example, Canda anchooides, Lamouroux. (Zooph. pl. 64, f. 15.) From Australia.

Caberea, Lamouroux.

Animals unknown. Cells small. Polyparyum calcareous, plant-like, dichotomous, articulated, bearing on one side the cells arranged in quincunx, and on the other the continuations of the flattened radicles by which it is attached.

Example, Caberea pinnata, Lamouroux. From Australia. Tricella, Fleming.

Animals hydroid. Cells with an oval terminal opening, arranged in three rows on the articulations of the polyparyum, which is plant-like, dichotomous, and fixed by radial fibres.

Example, Cellaria ternata, Solander and Ellis. European seas.

Acantarcis, Lamouroux.

Animals unknown. Cells cornuted, adpressed with a vesicle at the orifice, ranged in two lateral rows so as to compose the articulations of a horny plant-like dichotomous polyparyum, fixed by radial fibres.

Example, Cellaria neritina, Linn. (Ellis, Corallines, t. 19, f. a, A, B, C.)

Bicellaria, Blainville.

Animals hydroid, with eight simple tentacles. Cells hardly prominent, arranged in two alternate rows, with their orifices on one face of the polyparyum, which is of a cretaceous substance, plant-like, dichotomous, and fixed by radial fibres.

Example, Bicellaria ciliata. Ellis, 'Corallines,' t. 20, No. 5, d, D.

Crias, Lamouroux.

Animals hydroid. Cells ending in a prominent tubular opening, arranged on two alternate rows of articulations of a plant-like dichotomous polyparyum fixed by radial fibres.

Example, Cellaria eburnea. Ellis, 'Corallines,' t. 21, No. 6, f. g, a, A.

(Genus of Lamouroux included in that author's arrangement Bicellaria and Tricella.)

Gemellaria, Blainville.

Animals hydroid. Cells oval, with an oblique subterminal opening, united two and two dorsally, so as to form the articulations of a plant-like dichotomous polyparyum fixed by radial fibres. (Notania of Fleming; Gemellaria of Savigny.)

Example, Cellaria loriculata. Ellis, 'Corallines,' t. 21, fig. 7, 6, B

Uncellaria.

Animals unknown. Cells elongated, with a terminal opening, forming one by one the articulations of a calcareous plant-like polyparyum, fixed by radial fibres. (Eucratera and Latfina of Lamouroux.)

P. C., No. 1149.

Example, Uncellaria chelata. Ellis, 'Corallines,' t. 22, No. 9.

Catellina, 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. (Hippodræma Lamouroux?)

Example, Catellina Suffix, Egypt: see the great work on Egypt ('Description de l'Egypte'), 'Zool. Polyph.,' pl. 13, f. 1.

Maniposia, Lamouroux.

Animals unknown. Cells oval, trirufate; 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 sulfuraceous plant-like polyparyum, fixed by many radial fibres.

Example, Cellaria cinnabara. Ellis and Solander, t. 4, fig. 4, D.

Alecto (fossil), Lamouroux.

Cells elongated, 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 Caen.

Fam. 3. Serulariaceae.

Animals hydroid. Cells with simple (cilated?) tentacular and external ovaria. 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 tubes.

The Linnean genera Tubularia and Sertularia constitute this very natural and beautiful family, which is included in the Zoophyta Hydroida of Johnston, and the Nadibranchia of Forre. The genera which follow, from Lamarck and Lamouroux chiefly, require much reconsideration.

Section 1. Tubulariaceae.

Genus.

Anguinaria, Lamark.

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. (Aeolus of Lamouroux. Mr. Lister wishes it to be placed near Fustra.)

Example, Cellaria anguina, Linn. (Ellis, 'Corallines,' pl. 22, No. 11.)

Aulopora (fossil), Goldfuss.

Cells tubular, with a round opening, more or less projecting, anastomosed so as to form a polyparyum, attached to and more or less rampant on marine bodies.

Example, Aulopora serpens, Goldfuss. ('Petref.,' t. 39, f. 1.) Millepora dichotoma, Linn. From the Eifel limestone. Mr. Lonsdale and Goldfuss give other species from the same formation in England, in the Eifel, &c., and others of rather different type are mentioned by Goldfuss, from the oolites of Franceia.

Tibinia, Lamark.

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 radicles.

Example, Tibinia fasciculata, Lamouroux. (Polypp. 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 infundibuliform, placed at the extremity of long horned simple or bifurcated tubes, which form by their assemblage a rooted polyparyum. (Much allied to Campanularia.)

Examples, Tubularia indivisa. (Ellis, 'Corall.,' t. 16, f. c.) Tubularia ramosa. (Ellis, 'Corall.,' t. 17, f. a.)

Vol. XVIII.—3 B
Corynia, Gartn. 

Animals club-shaped: the upper oval part being covered with slender tentacula ending in suckers, and supported by a long simple or branched vertical attached stem. (Linnaeus ranked them with Tubularia (a confused genus in his arrangement); Müller with Hydra, and Lamarck places Corynia near Hydra, giving further to it the character of a terminal mouth.)

Example, Corynia squamata, Pallas.

Here come the genera Corynomorpha of M. Sars, Syn-corynia of Ehrenberg, and Pedicellina of Sars. In the latter both the mouth and anal orifices are at the upper extremity of the oval expansion.

Section 2. Sertulariaceae. (Genus Sertularia of Linn.)

Campanularia, Lamarck; Clytia, Lamouroux.

Animals bearing a simple circle of ciliated tentacula. Cells unprovided, pedunculated, attached along a common fileform, branching, twisting, or climbing axis.

Div. 1. Axis climbing.

Example, Campanularia volubilis. (Ellis, 'Corallines,' t. 14, fig. 4, a, A.)

Campanularia volubilis.

Div. 2. Axis not climbing.

Example, Campanularia rugosa. (Ellis, 'Corallines,' t. 15, fig. 23.)

Loomedea, Lamouroux; part of Campanularia, Lamarck.

Animals with twelve ciliated tentacula. Cells pedun- culated, scattered on the branches of a plant-like polyparium, fixed by radial fibres.

A. Stem simple; cells scattered. Example, Loomedea fruticosa, Esper. ('Zooph.,' t. 34, fig. 1, a, 2.)

B. Stem simple; with alternate cells. Example, Sertularia dichotoma, Linn. (Ellis, 'Corall.,' t. 12, fig. a, a, c.)

C. Stem complex; cells scattered. Example, Loomedea dumosa, 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, c.)

E. Stem complex; cells verticillate. Example, Sertularia verticillata, Linn. (Ellis, 'Corall.,' t. 13, fig. a, a.)

Ve-sicularia spinosa, Thompson. Valeria spinosa, Fleming. is arranged in this latter subdivision by Blainville. (See Dr. Farre's drawings of this species in 'Phil. Trans.,' for 1837.)

Sertularia, Lamarck; Amathia, Lamouroux.

Animals unknown. Cells very distinct, conical, almost tubular, placed in series on one side of the articulations of the fistulous branched and fixed polyparium.

A. Cells grouped.

Example, Sertularia lundigera. (Ellis, 'Corall.,' t. 5, No. 24.) Europe.

B. Cells in a spiral.

Example, Sertularia spiralis, Lam. Australia.

Plumularia, Lamarck; Aglaophenia, Lam.

Animals with 15-18 ciliated tentacula. Cells very distinct, axial, arranged on one side of the small branches of a fistulous articulated penniform polyparium, which is fixed by many tubular radical fibres.

Example, Sertularia pluma, Linn. (Ellis, 'Corall.,' t. 7, No. 12.)

Sertularia pluma.

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 Plumularia microphyllum. The works of Ellis, Lamouroux, and Dr. Johnston may be consulted for the drawings of the species, of which several are British.

Sertularia, Lamarck.

Animals having ciliated tentacula. Cells sessile, urceolate, arranged alternately or in pairs obliquely (not exactly opposite) on the stem and branches of the polyparium, which is horny, fistulous, generally bent in zigzag, and attached by radical fibres.

Thus circumscribed and reduced to a mere fragment of the great Linnaean genus, Sertularia still includes many species from the European and Australian seas.

Example, Sertularia Polyaxonias, Linnaeus. Ellis, 'Corallines,' pl. 2, No. 3.

Biseriaria, Blanchin; Thujaria, Fleming.

Animals unknown. Cells turbinated, sessile, not prominent, touching and placed in two rows along the ramifications of the horny plant-like polyparium, 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 polyparium.

Example, Idia pristis, Lamouroux. 'Polypl. flex.', pl. 3. Australia.

Tuliparia, Lamarck; Pasythea, Lamouroux.

Animals unknown. Cells arranged in pairs and small groups in each articulation of the polyparium, which is connected to a repent stem.

Examples, Sertularia tulipifera, Gmelin (cells pedunculated); Sertularia quadrigeminata, Gmelin (cells sessile).

Antennularia, Lamarck; Nemertesia, Lamouroux.

Animals with eight tentacula. Cells minute, indistinct, opening on the inside of ciliated articulations, which are arranged in whorls round a fistulous horny stem rising from root-like fibres.

Example, Antennularia indigera. Ellis, 'Corall.,' pl. 9, a. Dynamena, Lamouroux.

Animals with twelve simple tentacula. Cells urceolate, or tooth-like, sessile, arranged in pairs (regularly opposite)
and prominent along the branches and stem of a horn-like, articulated, plant-like, fusiform polyparium, which is attached by creeping radial fibres.

Example, Dynamena operculata. Ellis, 'Corallines,' pl. 3, No. 6.

Example, Plumatella cristata, Lamarck. 'Polype à pâchane,' Trembley, pl. 10, f. 8, 9.

**Dynamena operculata.**

This genus, rich in British species, is separated from Sertularia by convenient rather than by important distinctions.

**Cymodoceae, Lamouroux.**

**Animals unknown.** Cells siliform, 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.

**Salaciæ, Lamouroux.**

**Animals unknown.** Cells dentiform, minute, oval, verticillate four and four, along the tubular branches of a horny plant-like fixed polyparium.

Example, Salacia tetracyathra, Lamouroux. 'Polyp. flex.,' tab. 6, pl. 3. Australia.

**Thasæ, 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 baleana, Gmelin, Fleming.

**Entalophora (fossil), Lamouroux.**

Cells elongate, dentiform, recurved, with a round terminal opening, scattered on a plant-like, slightly ramose, fixed polyparium.


**POLYPARIA DUBIA.**

**Genera.**

**Crassella, Cuvier.**

**Animals short, growing irregularly from a common unattached basis.** Many ciliated tentacular cirri, arranged anteriorly in a lunate or horsehoe form, with the mouth in the middle of the branches. A median opening at the base of the dorsal region.


**Animals hydroid form, retractile into a fixed suberosa polyparium, composed of vertical subpentagonal tubes full of granular corpuscles.** Many tentacula arranged in a horsehoe figure.

Example, Alcyonella stagnorum, Lamarck, Blainville, pl. 85, f. 8.

Plumatella, Rose; Naless, 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.**

**Diffugia, Leclerc, Lamarck.**

Body small, gelatinous, contractile, enclosed in a sheath of an oval subepidermal figure, extended into a straight termination and covered with arenaceous grains. Tentacula unequal, retractile.

Example, Diffugia proteiformis, Lamarck. Blainville, pl. 86, f. 5.

It is perhaps still uncertain what may be the exact relation between the four genera of fresh-water Polyplia præiarii just enumerated. The strong analogy between them is admitted by all modern writers, and M. Raspail, in Memoirs 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.

**Dedalina (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, Dedalina mauritiana, Quoy and Gaimard. Blainville, pl. 81, f. 6.

**POLYPARIA NUDA.**

Under this division, only the genus Hydra (which see) is retained by Blainville. Lamarck included Hydra, Coryna, Pedicellaria, Zoanthus. Regarding Pedicellaria, which is attached to the shells of Echinus, it is perhaps a part of the Echinodermatous type. Coryna is included in Polyp. membranaceae. Zoanthus is closely related to Actinia.

**POLYPARIA CORTICIFERA.**

Lamarck has grouped under this title a family of Polyplia for the most part very natural. Ramified into an arboreal form from a fixed base; composed of two separate parts, an external living fleshy envelope bearing and containing polyp, and an internal firm solid inorganic axis; these corticiferous Polyplia, as Lamouroux also calls them, are in general easily recognized. Lamarck gives only six genera, viz. Corallium, Mollusca, Isis, Antipathes, Gorgonia, Corallina. (Whether the latter should be ranked with plants, as many moderns think, or compose a separate group of Zoophyta (Calciferous Corallines of Lamouroux) is uncertain; they are not rightly placed with corticiferous Polyplia.)

Lamouroux omits from the group Coralline, to constitute a separate section, but introduces rather awkwardly the group of Spongæ. Augmenting Lamarck's genera, he gives of true Corticifera eleven types, viz. Actinoplena, Antipathes, Gorgonia, Plexaura, Eunicea, Muricea, Primno, Corallium, Mollusca, Mopop, Isis. (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:

Gorgonsea—Pleura, Eunice, Muricea, Primnoa.
2. Lithopothyta with stony axis. Cornillum, Melita, Isis, Mopsea.
(Madrepores, &c. &c.) These are quite misplaced.

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 Zoophytes, which includes the families—1. Tubifera; 2. Corallia; 3. Pennatulacea; 4. Aleonaria or Barcosidae. The family of Corallia exactly corresponds to Polyptera corticifera of Lamarck properly limited. The Aleonaria are equivalent to Lamarck's Polypti tuberiferi, with Aleonum added, as Latrille has very properly done (Familles Natuerels, p. 343). We shall supply under the title Sambucaria what is required in addition to the article Aleonum. Pennatulacea and Tubifera form separate articles, and some general observations may be added under Zoophyta.

The Corallia, or true corticeous Polyptera, are thus explained by Blainville:—

Animals hydroform, with internal ovaria, and eight (pinnated?) tentacula irregularly scattered on the surface of a compound polypterus, formed externally of a living gelatinous-crustaceous substance, and internally of a solid horny or calcareous axis, concentrically laminated. The bare of attachment is large.

Genera.

1. Cornillum, Lamarck.

Cells immersed in a thin external fleshy integument; axis thick, stony, solid, striated, ramified, and fixed by a broad base.

Example, Cornillum rubrum (Gorgonia nobilis, Linn.). Ellis and Solander, pl. 13, fig. 3, 4.

This, the only species, is the common red coral of the Mediterranean.

Mopsea.

Animals with eight ranulose tentacula. Cells immersed in the integument. Axis stony, articulated, the articulations ramified, and separated by horned intervals giving origin to branches.

Example, Mopsea dichotoma (Isis, act.).

Melita, Lamouroux.

Animals unknown, scattered in a soft, fleshy, thin integument. Axis arborescent, ramified, composed of stony substratiated articulations, separated by spongy tusked intervals. (Colour red.)

Example, Melita coccinea. Sol. and Ellis, tab. 12, f. 5.

Gorgonia.

Animals with eight ovarian orifices; cells scattered in a thin integument; axis plant-like, solid, of a horny substance, fixed by a wide base.

A. Cells not prominent.

Example, Gorgonia patula. Ellis and Solander, tab. 15, fig. 3, 4.

B. Cells prominent, pustulous.

Example, Gorgonia habebulum. Ellis, 'Corall.,' tab. 26, fig. A.

C. Cells prominent, recurved.

Example, Gorgonia florula. Muller, 'Zool. Dan.,' t. 137. The fossil species from transition strata, referred to this genus by Goldfuss, are mostly transferred to Retepora and Fenestella.

Eunice, Lamouroux.

Animals with short tentacula. Cells mammillated, disposed or ranged in lines on the surface of the branches. External integument thick, cylindrical; axis horny. (This genus is not adopted by Lamarck.)

Example, Eunicea mammum, Lamarck. 'Polypt. flex.,' pl. 17.

Funicula, Lamarck.

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 Pennatulacea.)

Example, Funicula cylindrica, Lamarck. Blainville, pl. 50, r. 4.

Isis.

Animals very small, abundantly scattered in the soft thick fleshy integument. Axis arborescent, composed of striated calcareous articulations separated by horned intervals. Base attached.

Example, Isis hippuris, Linn. Ellis and Solander. 'Zooph.,' tab. 3, fig. 1-5.

There are a few fossil species from tertiary strata.

Pleura, Lamouroux.

Cells not prominent, immersed in a very thick integument, of a substance like cork when dried; axis arborescent, often dichotomous, horny, fixed.

Example, Pleura suberosa. Ellis, 'Corall.,' tab. 26, P. Q. R.

Muricea.

Animals forming prominent zonial mammillae of a squamose and tubular structure, scattered on the surface of the subdistichous branches of a plant-like polypterus. Integument thick, axis horny and cylindrical except at the origin of the branches.

Example, Muricea muricata, Lamouroux. 'Expos. Méthod.,' tab. 71.

Primnoa, Lamouroux.

Animals forming prominent elongated mammillae of a squamose structure; polypterus dendroidal, dichotomous; integument thin; axis horny and very hard.

Example, Gorgonia lepadifera, Linn. Blainville, pl. 87. From Norway.
which falls off on drying); polypaarum horny, flexible, solid, often spinoze, branched. Pallas says there are external turbinated ovaria. Mr. Gray assigns them to six tentacula.

Example, Antipathes ulax. Ellis and Solander, tab. 19, f. 7, 8.

Cirrhipathes, Blainville.

Animals very small, with six wrinkled tentacula (not pinnated?) immersed in a thin gelatinous integument; axis horny, simples, fistulous; polyparum conical, elongated, cirriform, with rows of spines. Mouth projecting and lobed.

Example, Antipathes spiralis, Linn. Ellis and Solander, tab. 19, fig. 1-6.

POLYPLOXYPHORA, [CRITONS.]

POLYPELETON. [PAVONIDA, vol. xvii, p. 337.]

POLYPODA'CRE. 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 petioles of the leaves, and which commonly present a horse-shoe appearance when cut across; each of the woody plates is soft in the interior, where the texture principally consists of scalariform and pitted vessels and cells, as is seen in the accompanying figure of a highly magnified slice of Cystheca Schanenich, where d represents a portion of the hard coloured cells that constitute the wood, properly so called, e loose cells, a scalariform vessels, and b pitted tissue.

The whole of these parts are covered over with a hard cellular integument, which stands in the room of bark, and 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 tuberoloe; 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-ferns 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.
Although tree-ferns are unknown in any countries except those having either a damp tropical climate, or at least an equable mild temperature and humid atmosphere, yet the common ferns of this country, whose stems, vulgarly called roots, are formed under ground, exhibit the same kind of organisation 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, Plicairn'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 breeze.

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 pinnation—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 Hemitis. Their surface is provided with stomates, 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 traces of sexual organs; for although Hedwig 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 the classification has been made as great difficulty. It has been attempted, with various degrees of success, by Swartz, Smith, Kaulfuss, A. Brongniart, Schott, and others; the most recent and apparently the best classification is that of Persil, published under the title of 'Mensae Fercographicae,' at Prague, in 1806. See also Mohl, De Structura Ficus; A. Brongniart, Hist. des Végétals fossiles, i. 392; and Endlicher, Genera Plantarum, p. 58.

Although the morbid growth attached to the interior of one or other of the mucous canals, by a more or less narrow pedicle. Polypii occur most frequently near the orifices of external communication of the mucous canals, as in the uterine, the fauces, the larynx, and the nose. A description of those that grow in the last of these situations may serve for all.

Polypii 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 seem caused by 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, which are the mucous membrane may be removed without destroying the name of polypi rather than from having the same situation as the preceding than from their similarity of form. They may assume the characters of simple or scirrhus cancer, but more commonly they have those of the soft or medullary variety (carcin) which is frequently called fungus hemorrhodentes.

The common symptoms of all polypi of the nose are that the patient is unable to breathe through the nostrils 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 several kinds seldom produce worse effects than these, for their growth is restrained by the firm tissues of the nostrils; but the two 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 of the nose, and in this state at last protrude by the anterior openings or backwards 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 astringent and tonic medicines with purgatives, 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, the patient should be carefully kept under the observation of some other stimulant, such as a dose of snuff, 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 after their removal it is very important to prevent 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 astringent 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 seized far back in the nostril, 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 measures 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 Bactinotis, Bellmerites, Bellanomph, Cornu Ammonis, Goniatites, 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 overhangs 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 genera of the Polyclamaceae Cephalopoda, which may be ranked in the following three families, viz. —

Tetabranchiata. Fam. 1. Nautilidae.
2. Ammonitidae.

2. Belonitidae.

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 observable 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.

Nautilidae.

Three principal considerations have guided the geological naturalists, to whom principally the divisions of the Nautiloid 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 concrementated, meet the inner surface of the shell. In most Nautili the siphuncle is nearly in the centre of the disk; in Cymemine it is on or near the inner or ventral 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 Orthocera, 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 Nautiloid Polythalamaceae, with following out to its remote consequences any one of these principles exclusively. From the general figure we derive three main groups.

A. Orthocera, &c. Straight.

B. Cyrtocera, &c. Incurved or convoluted near the apex, ending in a straight or recurved limb.

C. Nautili, &c. Altogether convoluted.

A. The siphuncle with the poles of the Orthocera not the septal edge, but the siphuncular structure; and, with Mr. Stokes, separate Ormoceras, because of its hissing interruptal siphuncle; and with Brongniart, 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. Orthocerothoites proper (excluding curved species, like O. paradoxum, 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 recognize 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. cinetum of the mountain limestone; the cone has an elliptic base, oblique septa, and an excentric siphuncle in O. lateralis, O. Brynni of the mountain limestone, and O. imbricatum 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 Gymnoceras (Silurian Researches); and another, from the mountain limestone, has received the specific designation O. fusiforme.

It may be remarked that the cases are few in which the apex of Orthocera 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 (Ophic, straight, combined with siop, a horn), Brongniart, a straight concrementated shell, with septa regularly conceve toward the mouth, perforated by a simple nearly cylindrical siphuncle, either in or not far removed from the centre of the disk (never marginal).

β. Last chamber cylindrical, as O. giganteum.

β. Last chamber contracted toward the aperture, as O. fusiforme.

Ormoceras (Ophic, a bold, combined with siop, Stokes), a straight concrementated 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 sepa are attached to it. The inner part of the siphuncle is divided 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 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 (Arisc, a ray, combined with siop, Stokes), a group subical concremented shell, with septa as in Ortho-

...mom 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 ventriculiform radia, 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 Espe in Ireland. (The genus Conocoeras of Bronn is included in Actinoceras by Mr. Stokes.)

Conularia, Miller, a straight (or slightly bent?) pyramidal four-sided (concennerated?) shell.

Conularia quadrilateralis 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 Coalbrook-dale and Rutherford.

(Sowerby, in the Mineral Conchology of Great Britain; and Murchison, in Silurian 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, Breyen; and it is subcentral or approaches the inner line of curvature in the genus Phragmoceras, Broderip.

The geological distribution of these forms is nearly as in the Orthocerata. They are all peculiar to the strata below the new red system; and mostly occur below the carboniferous or mountain limestone. Phragmoceras prevails in the Ludlow rocks; Cyrtoceras specially abounds 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 Phragmoceras: 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 (esprie, curved, and eipac, 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.

Several other species occur in Devonshire, near Ludlow, &c.

Gyroceras (ypac, incurved, eipac, a horn), Meyer. Coiled like a tendril, so that the involutions do not touch. Septal edge even, siphuncle dorsal, marginal. Aperture nearly round.

Gyroceras gracile, Meyer. Bronn, in 'Leth. Geol.,' vol. i., fig. 5. From the states of Dillenburg. Lituites, Breyen. Convoluted, so that the involutions touch in all the inner part, but afterwards extended into a straight or bent portion. Septa pierced by a subcentral siphuncle. Aperture nearly round.

Example, Lituites articulatus, Sow.}

Phragmoceras (diphylus, septum, eipac, a horn), Broderip. Shell incurved and compressed, more or less conical; septal edges entire, crossed externally by the lines of growth; siphuncle near the inner margin; aperture contracted at the middle, its outer extremity produced into an elongated beak.

Example, Phragmoceras ventricosum. Broderip, in Silurian Researches.

C. Among the completely spiral and convoluted Polythalamaceae, the situation of the siphuncle and the form of the septa become useful guides.

The siphuncle is dorsal in some Nautili of the mountain limestone, which ought perhaps therefore to be distinguished; subcentral in most of the Nautili of the oolitic, crinoidal, and more recent deposits, as well as in recent species; ventral in Clymenia (Munster) and in some otherwise true Nautili of the coal formation and magnesian limestone.

Phragmoceras ventricosum.

The septa are simply conceave, 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 (Goniaster); in a remarkable fossil from the London clay (Nautilus zaceus), deeply and angularly folded, nearly as in some Goniaster. Finally, in the Clymenia of Count Munster, all having a ventral siphuncle, the septal edge 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 oregologists, is found in many of the Palaeozoic strata, but not in the older ones, in all those of middle age, in the tertiaries, 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, disjoined from those of later date. Clymeniae are only known in a distinct and varied development in strata of the age of certain Devonian and Cornubian rocks, principally at St. Peterwin 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:
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 (Folkstone, Cambridge, Speeton); but perhaps the species of ammonioidal shells called A. ambrosius 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 Tropæum. (They are not known to have a straight elongation.)

The group C is very similarly circumstanced, only Scaphites Yoanii 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 Palæozoic rocks until we arrive at the tertiary series, in which, we believe, a species has really been found, and none have been seen in a recent state. The whole of the Ammonites then have vanished from the oceans, and their way of life is to be inferred from analogy only.

Spirulidæ.

These were partly internal shells (as probably also some of the Ammonitidæ, especially Scaphites, were). Spirula nodosa, Brunn, 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.

Belemnitidæ.

The genus Actinoecax of Miller, though adopted by Voltz and Blainville, is imaginary, being really only the retrat or apical part of the Belemnite separated from the conglomerated portion at a point where naucrose and easily decomposing laminae prevail, a little behind the apex of the naucrose. This is, we think, quite certain, from careful observation of the Belemnites quadratus and other allied forms in the chalk of Northfleet, and Belemnites jecula of the Speeton clay, the artificial parts of which have been figured as Actinoecax by Miller and Voltz. Pseudobelus is perhaps differently circumstanced, but its characters are very obscure.

The genus Belemnites 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 Belemnites alone the leading members of the English and European cretaceous and cretaceous systems of P. C., No. 1190.

Ammonites sublunaris. (Sowerby.) From Kellaway rock.

Ammonites Waloutili. (Sowerby.) From the Lias.

Ammonites venustus. (Phillips.) From Speeton clay.

The strata. Thus, to mention published species only, Belemnites subaduncatus of Voltz, with many allies, is a lias shell; Belemnites Aalenensis, also of Voltz, is a shell of the lower cetacean series; Belemnites abbreviatus of Miller, the large variety, is a shell of the middle cetacean series; Belemnites jaculum of Phillips belongs to the Speeton clay; Belemnites Listeri, to the gault and lower chalk ranges; B. quadratus, B. mucronatus, &c., to the chalk generally, or the upper part specially. None have been found in the tertiary series; none have been found below the lias.

Taking then a general view of the distribution of the Polythalamaceæ noticed in this article, we find—

In a living state . . . Spirulidæ and Nautilidæ.

In the tertiary series . . . Some of the Nautilidæ.

In the cretaceous strata . . . Nautilidæ, Belemnitidæ, Ammonitidæ.

In the oolithic strata . . . Nautilidæ, Belemnitidæ, Ammonitidæ.

In the saliferous strata . . . Nautilidæ (not including Orthoceratae), Ammonitidæ (of the type called Ceratitidæ only).

In the carboniferous strata . . . Nautilidæ, including Cyrtoceratae, Orthoceratae, Ammonitidæ (of the type called Goniastres only).

In still lower strata . . . Nautilidæ (including Cyrtoceratae, Phragmoceratae, Orthoceratae, and Clymenidæ); Ammonitidæ of the type of Goniastres only.

Finally, in strata lower than these, as the Snowdonian slates, where shells and Polyesian remains occur, none of the Polythalamaceæ are known.

POLYTHEISM (πολυθείς, much, many, θεός, a god), the doctrine or worship of a plurality of gods. This form of the word is not found in Greek writers. Philo-Judæus conveys the notion by τὸ πολυθεῖον, and πολυθεῖος ὄνομα, and Justin Martyr by πολυθεῖος. Philo also speaks of polycherby (πολυχερβίς), with which he contrasts monarchy (μοναρχία), meaning respectively polytheism and the unity of God. St. Athanasius uses πολυθεῖα as the opposite to μοναρχία.

Polytheism differs from idolatry in this respect,—the former refers to a plurality of gods, without including necessarily the notion of forms, real or imaginary; the latter refers either to one god only, under some one visible form, or to any number of gods, under as many visible forms.

No one who takes the Bible for his authority will deny that in the earliest ages of mankind the unity of God was implicitly believed. When the idea of a plurality of gods was first entertained, it is impossible to say. The writings of Moses contain no evidence that men were polytheists before the flood; but it is plain that in the time of Moses (s.c. 1500) polytheism prevailed. It is probable that the Chaldeans, of whom Abraham was one, were addicted to polytheism before his time (s.c. 1900), but it is certain that Abraham was not a polytheist. His contemporaries, vol. XVIII.—3 Č
Melchizedek, 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 be it as it may, the Sabaite, 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 creator was the true holy god, the other, the devil, the evil spirit. Haeckel, the former, according to Plutarch (De Isid. et Osir., § 46), was called Oromasdes, and the latter Arimanus. [ARIMANIISES.] Among the ancient Arabians we find Job and his friends, and despisers of superstition, and worshippers of one God; but yet in the time of Job the worship of the heavenly bodies was practised, as is plainly indicated in Job. xxxii. 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 Being, under the names of Zeus (Zeus) and Jupiter, as supreme over all other gods. From this time forward polytheism was the absolute power 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 ancient 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 appeared to be polytheists, the people have been polytheists in reality; and, as Philo-Judeus says (De Enoliate), 'Polytheism in the minds of the ignorant is atheism.'

The progress of polytheism seems to have been, or might have been, something like the following:—men looked 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 worshiping them. Then they regarded certain of the brute creation, as either serviceable and so to be revered, or noxious and so to be dreaded, and they converted them into gods. Thus it was also with respect to mountains, rivers, and other natural objects. If the Deity was not all, they devised a multitude of rites in honour of their respective gods, some of which were of a most debasing character.

Wherever the Christian religion has been established, polytheism and its attendant evils have disappeared; but the Christian religion is not the only one 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.)

POLYMA, A GENUS OF MILLEFOLIUM.

POLYTROPA, Mr. Swainson's name for a genus of Maricaide, placed by him under his second subfamily Scapiminae, with the following:

Generic Character. -Beciform; but the base narrowed, and ending in a straight and contracted but rather short channel; spine longer, or as long as the aperture; exterior foliated or tuberculated; inner lip flattened, as in Purpura; basal notch small, oblique; no internal channel.

Example. Polytopra crispata. (En. Mâth., 419, f. 2.)

POLYTRYP. [POLYPIRAMIA.]

POLYXENES. [Foraminiuera, vol. x, p. 368.]

POMACE. [FAM.]

POMATORHYNUS. [NERULUM, vol. xvi, p. 123.]

POMBAL, MARQUIS DE. DOM SEBASTIAO JOSÉ DE CARVALHO, Count d'Oeiras and Marquis de Pombal, was one of the most able public men that have ever appeared, and certainly the only distinguished statesman that has ever presided over the councils of the Portuguese nation. He was born in 1699, at Sours, 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 place, he proceeded to Coimbra, where he obtained the degree of Bachelor of Law, but on the completion of his tour of study he was appointed to the bench at Coimbra. He was originally destined for 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 native temper, he turned his attention to the study of law. But this profession did not prove more agreeable to him than that which he had relinquished. Various causes for his leaving his regiment have been conjectured. What was certain was that he was of a manly disposition, and of that indomitable spirit which gives to the heart of man means of deciding; 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 archbishopric of Aquinon.

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 in the history of the last war. The marriage was fixed by Frederick the Great of 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, in the midst of the domestic and foreign affairs of the state, to grant to Carvalho a large grant of land in the province of Estremadura, and the revenues that went with it. The subsequent history of Carvalho is as follows. He was attached to the court of Portugal, where he held office for some years, and was instrumental in the education and formation of the Prince of Portugal. He then returned to Vienna, where he was received with distinction, and was appointed to the post of ambassador to Austria, which was the highest office in the kingdom.

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. The charges have not been without foundation; but both these extremes are usually distantly distant, and the truth is that Carvalho may have been as profound a 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 ancient languages, the cultivation of the sciences and a greater regard for the practical duties of life. He established a university with a chemical laboratory, a botanical garden, and an observatory; he introduced into Brazil the cultivation of coffee, sugar, cotton, rice, indigo, and cocoa; he created the companies of Peranbuco, Paris, and Marrano, and established an extensive commerce with other countries. The Marquis of Pombal however is not without reproach. His unremitting persecution of the nobility, and his merciless conduct towards the family of the Tavoras and every individual whom he suspected of having had any part in the attempt against the life and 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, Dona Theresa de Noronha Almada, belonged to one of the most ancient
families of Portugal, and was the daughter of the only neice of the Alphonse; 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. Carvalho, in which circumstance is attributed his hatred of that class. On the death of Joseph 1., the queen, who considered that Carvalho had occupied that place in the affections of the king which she alone ought to have filled, and had liked so well, not in account of his personification 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 him, and the beauty of things that is due to him. His designs after the earthquake. He was created Count d'Oeiras 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 1.; 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 in which he had adopted to make himself rich, the quiet way in which he lived, and with his general system of economy, can doubt of his integrity. When he retired from the ministry, he left about forty-eight millions of cruzados in the public treasury, and they were the only pecuniary treasure which the government of Portugal had never had before. (Recordaposs de Jacomo Ratton; Memoires de the Marquis de Pombal; Chalmers's Biographical Dictionary; Barrow's Dictionary.)

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 13° 20' and 18° E. long. It is bounded on the north by the Baltic, on the east by Prussia, on the south by Silesia, and on the west by Mecklenburg. It is a long tract of coast, extending 200 miles on 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 three governments of Coeslin, Stettin, and Stralsund. Pomerania is the least of the flattest countries in Germany; only a few hills of moderate height break this continuation. The main rivers are the Oder and the Neisse. At Goslau and Zunow, which is the highest, it 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 thrown up. Formerly the whole country, part of which is called further Pomerania, is 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 Ribgen, 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, towards its mouth, the great Dammer Lake, and, together with the main stream, falls into the extensive inland water the Flische Haff, the eastern part of which is called the Salzgitter, a remarkable island. The water of the Haff is fresh, and it 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 coast of the French and German provinces is less. Two small rivers, one falling from the Baltic, with which it is connected, and by three outlets: on the east by the Divenon, which falls into the sea between Wollin and the continent, after forming a great arm, called the Vistula River; the other falls into the Swine between Wollin and Usedom; and on the west by the Peene, between Usedom and the continent. These three outlets might be called the mouths of the Oder. The Ucker from Brandenburg, and the Peene from Mecklenburg, both navigable streams, fall into the Flische Haff. The Elbe 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 Madise, 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 natural productions of the country are:—1., horses, horned cattle, sheep, goats, swine, small game (especially geese), sea and river fish, and bees; 2., corn, peas and beans, potatoes, fruit, timber, flax, and tobacco; 3., alum, bog-iron, salt, turp, and amber. The soil in some parts of the province is very fertile. The cultivation of agriculture is in a very backward state; and notwithstanding the industry of the inhabitants, no great improvement can be effected. The Pomeranian however has done everything he could, and many plantations are now cultivated. The country produces more corn than is required for home consumption. Sufficient flax is grown for the use of the inhabitants; and fruit is so abundant, that many 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, and many wild duck, geographical name of the island. The fish-fishing is also of considerable profit; but the sea-fishing is not carried on to the extent that it might be. Of fresh-water fish, large quantities, both fresh and smoked, are exported. The fish-fishing of the general kingdom is considerable. Some trade is carried on 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, as they are called) are annually manufactured. There are no manufactures of much importance; good and strong linen however is made, and is a considerable article of export. What manufactures there are, are confined to the principal towns. [Stargard; Stettin; Stralsund.] The Pomeranian province is divided into three parts: one part 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 Scalvovians 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 Germans are the oldest and the most influential and the most numerous of the two races. Genuine Scalvovian 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 Scalvovian language, and still 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 peasants was abolished by the late king Frederick William III. The population, according to Dietrieker (1838), was 941,193, that is, on an average, 1660 to one German or twenty-one English square miles. A recent return gives 1,282,496. Of these, 810,701 are of the German, 308,766 of the Scalvovian, 15,023 of the Dutch, and 4920 of 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 famous. 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 (Otto's Well). The line of the dukes became extinct on the death of Boleslaus XIII., in 1637. The
last female descendant of the Pomeranian dukes was married to a 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, was under the influence of Sweden, which was a power destined to be one in the North Sea. The Swedish king, with the assistance of Westphalia, with further Pomerania (to the east of the Oder), leaving Sweden in possession of Hither Pomerania, with the island of Rügen. Charles XII of Sweden was however obliged to cede, by the treaty of Stockholm in 1718, the eastern part of Pomerania and the islands 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 Swedish Pomerania, which Sweden had ceded to Denmark as a compensation for Norway. In exchange, Prussia gave to Denmark—1, the duchy of Lausenburg, 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 dockets in this province to the amount of 43,000 dollars annually; 4, it paid Sweden 3,500,000 dollars; so that in all it gave to Prussia, besides the dockets, 2,500,000 Prussian dollars, 500,000 Swedish dollars, and the indemnity to the Swedish holders of dockets. It is worthy of remark, that the sum of three millions and a half of dollars paid by Prussia to Sweden for a province which had been held by Prussia for two hundred years, was claimed by the present king of Sweden (Bernadotte) as belonging to himself. Of this sum he applied two millions to the service of the state, as an especial favour, and put the rest to his pocket and that of his wife. (Stein, Geographisches Lexicon; Conversations Lexicon; Dietrici, Von dem Verkehr im Preussischen Staate und im Deutschen Zollverband; Hassel, Handbuch.)

POMPEII, a town in Campania, was born in 1687, at Luton in Bedfordshire. He studied at Queen's College, Cambridge, where he was admitted to a Bachelor's degree in 1684, and to a Master's in 1689. Having entered into orders, he obtained the rectory of Maldon in Bedfordshire. In 1702 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 the Church. He was also accused of marrying, without the bishop's knowledge, and could remove the bishop's objections, he was attacked by the small-pox, which carried him off in 1703, in his thirty-sixth year.

He published his poems in 1699, 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 independence—that would be the life 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 Pomet. They are deservedly neglected. (Johns, The Poets.)

POMMERN. [Pomerania.]

POMERIA, or, as it is written in inscriptions, POMERIUM. The Pomerium, according to Livy (t. 44), was an absolute influence on the wall of the town of Rome. This spot was consecrated by the Etruscan ceremonies of inauguration; and whenever the city was enlarged, the Pomerium was also extended. The space within the wall might not be built upon, and the space without was called ilium. This definition of the Pomerium is true only where the Pomerium coincides with the real wall; since during the later times of the kings, and subsequently, the Pomerium was extended beyond the wall. The Pomerium included 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 Pomerium till the reign of the emperor Claudius (Aul. Gell, xiii. 14), although it had long before that time formed part of the city. The Pomerium of Romulus, which is traced by Tacitus (Ann. xiii. 24), included only the Palatine. The Quirinal hill is said to have been added by Numus (Dionys. Ant. Rom. ii. 62), and the Caelian by Tullius Hostilius, to the boundaries of the city, by which it 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 consecrated by Servius Tullius, and the Capitoline by Numa (Cic. De Respub. ii. 44), and the Aventine, as already stated, by the emperor Claudius.

We learn from Tacitus (Ann. xiii. 23) and Aulus Gellius (xiii. 14), that the Pomerium was considered an heirloom of the pomerium who had enlarged the limits of the empire. Tacitus adds that 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, xiii. 14; Dion Cass, xliii. 50; Cic. Ep ad Att., xii. 29, 33, 35.)
the letter of Pliny the Younger, whose uncle lost his life on the occasion.

In this eruption both Herculanum and Pompeii were buried; the former under a mass of lava, Pompei under ashes 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 save 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 periods of time the various ruins were surrounded with fresh earth and grass grew upon it, corn was sown, and the vine was planted in the fields thus formed above the ruins of Pompeii, whose existence was forgotten until 1689, when the first excavations of ruins were made. In 1755 the excavations began. They have been interrupted and resumed at various times, and the result has been that about a fourth part of the city along the western side of the city has been cleared of the rubblish. This portion, which appears to have been the finest part of the town, contains about eighty houses and numerous small shops, two theatres, two basilicas, eight temples, several public buildings, baths, and other public buildings of less note. The city was antiently surrounded by walls, of which the greater portion has been traced, including six gates and twelve towers. The circuit of the walls is 2,200 feet. The measurements about one hundred and sixty-one acres. There were however suburbs, one of which, at the north-western or Herculanum gate, is partly excavated, and is called the suburbium, from a number of handsome tombs which line the road leading to that suburbium. There stands in the villa of Diomedes, 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 occupies a square of about forty yards; and near it is the house of Pana, 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. ATRIUM. Nearer to the forum are the baths, in very good preservation, which appear to have been finished a short time before the fall of that part 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 one hundred and sixty wide, the whole being surrounded by a colonnade of about thirty-five columns, 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 two 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 forum stand the ruins of a building, which has been called the temple of Jupiter, 120 feet long and 43 feet wide; where entire, may have been 60 feet high. The 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 colonnade of twelve columns, and by thelik of Lucina, or court of justice, the largest building in Pompeii, 220 feet long and 80 wide; the lateral walls remain, but the roof and upper gallery have fallen in. On the opposite or eastern side were the old forum of the houses, being chiefly of wood, were surrounded by a 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 nine feet high, and in the middle of which are cells for the priests, and on the other side is an aula, 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 also, all being 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, under the superintendence of the Useful Knowledge Society, and to the elaborate works of Mazzoi, 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 public buildings. The numerous statues, medallies, and other movable antiques found at Pompeii have been deposited in the Royal Museum of Naples, and are described in the work entitled 'Museo Nazionale.'

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 Capio, a few months after the death of Cinna and Cæsar. 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 Cinna against the adherents of Cæsar. 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 crowd in Bithynia, the body was cut into pieces, and the fragments were tossed from the beam 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 name of his master is not mentioned till 89 B.C., in the Masic war, when he accompanied his father to fight against the Italians; he was also in the battle at the gates of Rome between his father and Cinna and Sertorius. Soon after this battle, Cinna caused money to be distributed among the soldiers of Pompeius Strabo, and bribed a friend and comrade 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 the city was restored to order. Pompeius' father, C. Pompeius and Q. Hortensius, secretly betrothed himself to the daughter of P. Antistius, 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 organised three legions, consisting chiefly of the veterans of his father. Three generals of the Marian party surrounded him in three different camps, and their imprudent conduct enabled him to attain his object. He was received by the senate as one of them, M. Brutus, and defeated his cavalry, and in its flight threw the infantry into disorder; the two other generals, discouraged by the failure of their colleague, retreated. Pompey was received in the town as their deliverer. (Plut., Pompei, 7.) The senate was indignant at his arbitrary proceedings, but his army remained faithful to him. At the interview which he afterwards had with Sulla, for whose honor he was averse 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 upon him, 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 superior of reality 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. Licinius Lucullus was besieging Sertorius at Clusium, his legates Marcus and Carrius were defeated by Pompey. Carro then retreated to Ariminum, and sent Marcus to the relief of Pannonicus, but Pompey repelled him in the Apennines with great loss. Carro 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 Pannonicus was prepared. Sulla, partly to rescue the young champion of his party, partly to make himself sure of his attachment, presented him with the hand of his step-daughter Atimilia, who was pregnant by Marcus Glabrio, from whom she was otherwise barren. (Plut., Sulla, 9, 4; Pol. Juv. 1, 13). Sulla, who was married to Antistia, abandoned her, but Atimilia soon afterwards died in childbirth. Pompey was thus a declared champion of the party of Sulla, and after the war in Italy, to avenge the death of his host, took to the task of reducing the remaining enemies of the aristocracy in Sicily, Africa, and Spain. Carro attempted to escape to Egypt, but was overtaken and brought in chains before Pompey, at Litor- borum; his companions were put to death without even the form of trial; and Carro, though himself a 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 the moderation in his conduct, but it is not unexpected that those whom it would have been useless to destroy. Leaving the administration of Sicily in the hands of Mem- mius, his brother-in-law, he set out for Africa with an immense army to Domitius Africanus, under whom some remnants of the Marian party had assembled, and also to support Hiempsal, a friend of Sulla, against Hiarsa, king of Numidia. A battle ensued, in which Pompey, though with great loss, gained a victory. Domitius fell; Hiarsus 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 and personal advantages in a manner that astonished the world, where thousands came out to meet and gaze at the young hero. Sulla himself complimented him with the appella- tion of Magnus (the great), which henceforth became heredi- tary in his family. The time at which he received this surname was stated by Pompey himself in his Commentaries, where 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 discussions took place in the senate, where great efforts were made to prevent such an unpre- cedented occurrence, and when at length Pompey had re- course to threats, saying that the people would prefer the rising to the setting sun, Sulla, indignant at his arrogance, ex- pelled him from his triumph and prevented him from entering Rome in triumph. After this display of childish vanity Sulla treated him with a coldness which did not fall much short of contempt. (Plut., Pompey, 15.)

The nature of vanity in his character explains the otherwise unaccountable fact that, in speaking of Sulla, he ex- erced all his influence to secure the consulship for Aemilius Lepidus. Sulla, foreseeing the consequences, said to Pom- pey, on this occasion, "Thou hast given the sword into the hands of Carbo, to whom it is given to destroy all (74)." And 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 general, had the matter referred to the people. Twisting his great precautions taken by the senate that peace and order were maintained during the consulship of Lepidus and Q. Catulus; but after the expiration of the year, when Lepid- dus had gone to his province of Gaul, the war broke out. Lepidus was defeated by the united forces of his late col- league and brother-in-law. Pompey, who at this time was manded 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 Cisalpine Gaul. Brutus defended himself bravely in Mutini, until at length he was overcome by the superior numbers of his in- surrectionists. Pompey, who the senator compelled him to surrender: he obtained the promise of safe passage, but was put to death the next day by Gemi- nius, at the command of Pompey. (Plut., Pompey, 16, 64; Brut., 4.) Scipio Aemilianus (60 B.C.) was made prisoner in Liguria, and likewise put to death at the com- mand of Pompey. Lepidus was at length attacked by Ca- tulus and Pompey, in the neighbourhood of Cosa, and being defeated, retired to seek refuge in Sardinia, but he was repelled 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 Ser- torius 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 com- mand, and his fate was sealed. (Plut., Pompey, 17, 9.) He was anxious to obtain the command against Sertorius. And when indeed the power of Sertorius assumed a more threatening character, when Perperna had joined his army, and the opposition to Pompey took the form of the command against so formidable an enemy, it was at length reluctantly deemed that Pompey should be sent to Spain with the power of a proconsul, and in 40 days he was ready for the road to Cerveteri, with a force of 30,000 horse. He left Italy in 76 B.C., when he was thirty years of age. He crossed the Alps, according to Appian (Civit., i. 109), between the rivers Rhône and Po, and directed his course towards the southern coast of Spain. He was joined by a large number of the Roman allies, and by his adversaries, declared for him. In the ensuing campaig- n against Manlius Perperna defeated Perperna, and took his camp, but Sertorius wounded Pompey with his own spear, and com- pelled him to retreat. Not long after, a great battle was fought near Seguntia, in which Pompey was again defeated, and 6000 of his men were slain. In this way the war was carried on with various success for nearly four years; and not until Sertorius had abandoned all hopes of success, and at last assassinated by conspirators headed by Perperna (74 A.C.), he would probably have driven the Romans from Spain, although Pompey conducted the war with great success. He had returned to Italy, when he was informed that his rival Perperna was to have launched a new expedition, strongly supported by the consul Lucullus, who feared lest Pompey might return, as he had threatened to do, and ob- tain the command against Mithridates. Pompey advanced in Spain for the purpose of bringing against Mithridates. (Plut., Pompey, 20, 4.)

After the death of Sertorius, Perperna 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 em- boldened 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 house in the city; 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 con- stitution of Sulla. Pompey refused to see him, and ordered him to be put to death, and the papers burned without being read. The army of Perperna 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, and those who had supported the enemy of their own country, were individually rewarded with the Roman franchise. (See, Pro C. Bulbo, 6.) As Metellus left Spain before Pompey, the Senate at first supposed that Pompey would celebrate the war with a triumph. But Pompey was not a man to appear before the public with a face 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. It is probable that this show of independence, which undertaking had been crowned increased his vanity and the admiration of the multitude, who took him for what he
Pompey 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 revoluted slaves under Sparticus. On his return, Pompey erected in the Forum a temple called the Temple of the Glory, an inscription recording his victories. (Strabo, iii. 4, p. 257, and iv. 5, p. 287, Tauchnitz.) On his return through Gaul he settled some of the bands which had served under Sertorius, for almost all the parts of Gaul held the name of Lingdunum Convenarum (St. Bertrand), (Hieronymus, Adv. Vigilant, tom. iv. p. 262, ed. Monach. Benedict, Paris.)

Pompey had hitherto been constantly engaged at the head of 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 position 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 entered at once in order that Pompey might not 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 5000 slaves, who were on their march, which he fulfilled with great vigour. The senate of 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. It was obliged to make use of the influence which Pompey had gained at his cost. Pompey, too, absent from Rome, was a candidate for the consulship, and was prudent enough to recommend Crassus as his colleague. As Pompey had not yet been invested with the minor consular offices, he could not legally be a candidate for the consulsip. 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 declared that he would restore the tribunician power, which was abolished by Sulla, and would do all he could to stop the abuse which the aristocratic party made of their judicial power. The two consuls elect and Metellus stood with their armies before Rome, and on the 31st of September, 71 n.C., with many of the chief men of the Roman order, and Pompey and Metellus in triumph. Both consuls now did their utmost to gain the favour of the people, and Pompey began to fulfill his promises. The question concerning the restoration of the tribunician power had been agitated for so many years, that most of the people were not in a state of great excitement, for the abuse of their power by the senatorial party had become intolerable. When Pompey brought his rogation before the senate, the opposition was not so strong as it 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 tribunician power; thus the people could have the advantages of the apparent and the 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 the tribunician power, and gave it to the people. It divided the judicial power equally among 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. After the expiration of his consulsip 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 foresaw that the time was not far distant when his invincible arm would again be required to save Rome from destruction. The Mediterranean coast was at this time covered with pirates. The whole coast was 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 bound to be reduced to the most wretched straits, if it were not rescued by the pirates. The tribune A. Gabinius, a man whose fortune was completely ruined, brought forward a resolution that a consular senator should be invested with unlimited powers for chasing the pirates throughout the whole Mediterranean and its coasts to a distance of fifty miles, and he asked 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 resolution 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 votes of the people, Pompey appeared 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 resolution was carried on the second day, notwithstanding the most violent opposition. The preparations for war were completed during the winter, and in the spring of the year 67 B.C. he began his operations in the Mediterranean. His legates were stationed in various quarters of the sea to watch the pirates and to prevent them from uniting their forces and coming to the east. Within forty days the sea became calmer, and he already felt the benefit of his exploits. He then landed at 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 contributed not a little to induce the rest to surrender. All the towns and former pirates were enrolled in the Roman army, and most of their fortresses, and everything which might enable the pirates to recover their strength, were destroyed, and they themselves were transplanted to Soloces (henceforward called Pompeipolis) and other deserted towns of Cilicia and Greece, which were already suffering from the depredations of the pirates, and were made 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, 75 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 powers, was not afraid of any part of the empire, was little concerned about it, and he remained 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 of Rome had now the most unfounded confidence in Pompey, and when C. Manlius produced a bill (Cicer. Pro Lege Manilia) for giving to Pompey the conduct of the war against Mithridates, the citizens were unable to resist the proposal, 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 the fact that Pompey was in Asia was received with universal satisfaction, with apparent dissatisfaction with those who had opposed him. He would allow him no peace, and would expose him to the greatest dangers in order to get rid of him. (Dion Cass., xxvii. 28; Plut., Pompeii, 30.) Notwithstanding this, he immediately set out (66 B.C.) to take the place of Lucullus,
whom he treated with arrogance and the neglect of all common civility.

It fact admitted by the ancient writers themselves, that the power of Mithridates was broken before Pompey undertook the command, but it is nevertheless certain that he acted with great energy and prudence, so that the expectation of his able leadership at Rome was fully justified. Mithridates, when reposing in his winter-quarters on the coast of Asia, discovered that Pompey was approaching

him, and determined to march against the Romans, and thereby made him his friend and ally. Mithridates, seeing thus deprived of his hope of receiving succours from Parthia (Appian, Mithrid., 87; Dion Cass., xxvii, p. 243, suet., Caesar, 39, secunda), resolved to march towards Lesser Armenia, and march through Thessalonica higher than Pergamus towards Acilisena, to separate those Mithridates from Tigranes. The king took the same direction. The hostile armies met, and after some skirmishes Mithridates retreated to save his men, but he was attacked by the Romans at night in a narrow pass, where 10,000 of his army were slain and an equal number made prisoners, while Pompey only lost a small number. The king himself escaped with some horsemen to the Tauro-Chersonese (Crimes). Pompey, being unable to overtake him, took up his winter-quarters in Colchis, and founded the town of Neopolis on the field of battle in Armenia. He then advanced against Artaxias, the king of Tigranes, whom he had by his son’s report discouraged of the approach of the enemy, appeared as a suppliant before Pompey, who, pleased with his submission, called him the friend of the Romans, and, as he had done, and only required pardon for his 6000 talents, of his son as a hostage. A part of the Roman army remained under L. Afranius, in the country between the Euphrates and Araxes, while Pompey with the rest marched towards the north and took up his quarters on the river Cyrus (Kur), as the season was too far advanced to approach nearer the Caucasus. Here the Romans were attacked by Oroses, king of Armenia (Shirvan and Daghsthan), with 7,000 horsemen; but it was not till the king was defeated; and when the king sued for peace, it was granted him on condition that he should allow the Romans a free passage through his territory.

In the year 65 B.C. the Romans had again to sustain an attack from a king of the Iberians, between Albania and Colchis; but the barbarians were routed and put to flight, and the king sent both money and his sons as hostages to the Roman general. Pompey now proceeded to the mouth of the Euxine, where he came to join his legate Servilius, who had the command of the fleet in the Euxine. From him he learned that it would be useless to force his way through the Caucasian regions to the Crimese, where he had easily he desired to till he was receiving information of an insurrection of the Albanians, he returned to the river Cyrus. The barbarians were routed, and Pompey again granted peace to their king: he determined at the same time to abandon Mithridates to his own fate, and to seek richer laurels, and which were more easily to be gained, in Syria. He received ambassadors

from several Eastern princes, who saw, or thought they saw, that their fate was in his hands, and even the nearest relations of Mithridates joined the Romans and threw open to them their fortresses. Pompey, thus assured of his own good fortune, gave to Pontus the constitution of a Roman province; his fleet however was ordered to cruise in the Euxine, and to prevent provisions being conveyed to the king in the Crimea.

On his march southward he passed the hills of Zela, where, three years before, a legate of Lucullus had been defeated by Tigranes. At this time Pompey ordered the bones of the slain, which still lay scattered over the field, to be solemnly buried. On his arrival in Syria he dethroned Antiochus XI., and made his country, together with Phoenicia, a Roman province, and at the same time he found a strong and immediate opposition. Jerusalem was disturbed by a civil war between the two brothers Hyrcanus and Aristobulus: Pompey declared himself in favour of the former, and besieged Jerusalem. The town soon capitulated, but the Temple held out rather more than three months. Pompey allowed the sanctuary to remain, but did not allow his soldiers to destroy anything. Aristobulus was sent to Rome as prisoner, and Judaea recognized the supremacy of Rome by an annual tribute. In Syria, Pompey was again complimented by ambassadors from various Eastern princes: Mithridates also sent envoys, and sent his representative to a meeting at Caesarea, and made the submission of nothing but absolute submission, and the negotiations were broken off. Soon after, when Pompey was proceeding southward to add Arabia to his conquest, he received intelligence that another Mithridates, who had been driven by the submission of some Arabian chiefs, hastened through Syria and Cilicia back to Pontus. Immense treasures were here surrendered to him; and the Romans, son of Mithridates, was sent to Rome, either to 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 Bosphorus; Deiotaros, tetrarch of Galatia, was rewarded with Lesser Armenia; Bithynia, Paphlagonia, and Pontus were restored to their ancient kings; and Cilicia and Pamphylia under the name of Cilicia and Syria. Aristobulas reigned under 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 Caesarian conspiracy. (Plut., Cæs., 23; Cat. Hm., 28; Suet., Caes., 40). In the year 58 B.C. Pompey landed on the coast of Brundusium and dismissed his armies. 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 meet him on his arrival. He was finally invested with the consulate by the senate. 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 all the wealth 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 spoil of the pirates. He entered the city on foot, and himself entered the city, and before his chariot walked the most distinguished of 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., xxi, 24). After the triumph was over, Pompey dispersed 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 of 65 B.C. and the triumph of 58 B.C.

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. He was not disappointed, and obtained the support of L. Afranius, whom he had promoted to the consulship. But he found himself not only opposed by Cato and the heads of the senatorial party, but abandoned by the party of Afranius. This blow was too severe for a man like Pompey to bear, and he now 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 affections 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 the senate, joined his party, and the demagogy of the Caesars was 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 soldiers, and to divide amongst them a part of the spoils of Cilicia and Syria. Pompey however did not allow his soldiers to destroy anything. Aristobulus was sent to Rome as prisoner, and Judaea recognized the supremacy of Rome by an annual tribute. In Syria,
Albanian near Rome, unconcerned about the sufferings of his great sultanat Cicero, who was driven into exile by the tribune Cato; and it was not until Cicero had made an attempt to assassinate Pompey that he promoted the recall of Cicero. Gratuius induced Cicero to endeavour to re-establish Pompey in the popular favour, for procuring by him the praetorship a nome for five years. Thus the consul reconquered the power which, with fifteen legions at his command. (Cic. Ad Att., iv. 1; Dion Cass., xxxix. 9.) In this capacity he went to Sicily, whence he sent provisions to Rome, and the favour of the people was easily gained, as the same thing was give up to him. He then had the conscription of the year 56 B.C., Pompey returned to Rome, where he exerted his influence for the restoration of Polemaeus Auletes, king of Egypt, who had been expelled from his throne by the marriage of his daughter with Marcus Licinius Crassus, who he accused Milo; and when Pompey defended him, he was loaded with abuse by Cælius. This affair also involved him in a contest with the tribune Cato, who attacked him in the senate, and accused him of falsehood to Cicero. The silence of the audience 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 left but submission to Caesar, who had taken up his 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, whereupon the Roman assembly was to be prolonged for five years, and Pompey and Crassus to be made consuls for the following year, with the provinces of Spain and Africa for Pompey, and Syria for Crassus. He moreover prevailed to exert all his influence with the people for his own personal advancement. Pompey now returned to Rome with renewed courage and arrogance, and with Crassus as a candidate for the consulship. The opposition, headed by the inflexible Cato, who saw through the plot, and was true to the triumvirs, was at first, though useless; 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 tribune now accompanied them to assume the consulships, on the provinces on which they themselves 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 only him as an instrument for the accomplishment of his own objects. Pompey built a magnificent theatre, and abused the multitude for several days with the most gorgeous spectacles. But the Etruscans, who had finished their civil war, when they shortly after raised troops in Italy and Cisalpine Gaul, and sent them to Spain under his legates Afranius and Petreius, the people loudly expressed their discontent. At last he quitted his own province to govern the province of Illyricum, the province of which had just 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 Cæsar 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 endured the dictatorship, and when the three Luscius Hirrus and Caius Vinicius prevented the elections, and at last proposed to make Pompey dictator, he was obliged openly to come forward, but perceiving the velocity of Gustius and Cato, he withdrew, and Domitius Calvinus and Valerius Messala were elected consuls for the remainder of the year. At the end of their consuls, the elections were again disturbed, and Pompey conceived fresh hatred towards Caesar. He was treated with singular kindness by Cæsar, and the senate, unable to obtain 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 help of Crassus, to collect troops, 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 fear of them. On the 25th of June, Pompey was made sole consul, but on the 1st of August he made Metellus Scipio, whose daughter Cornelia he had married, his colleague, and with him held the comitia to elect consuls for the following year. At the same time an old law, that in most instances had not been renewed, which required that every candidate for a public office should be a candidate in person at Rome. This was manifestly aimed at Caesar, who thereby would be compelled to return to Rome, where he had been before, and where 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 was slaying whose election the people procured the 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 insisted that Pompey should likewise dismiss his army. (Cæsar.) After long discussions, the party of Pompey gained the day, and a decree was made declaring Caesar a public enemy unless he resigned his command, and that the public authorities at the same time received orders to guard the republic against any danger, and Pompey was allowed to make use of the public treasury for the purpose of raising an army in Italy. Pompey had declared that he only remained to attend the foot of the camp. Pompey now returned to Rome with new legions; but when he found that he had miscalculated, he and the whole senatorial party were thrown into the greatest confusion by the intelligence that Caesar was advancing. On this occasion Cæsar 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 capital, in despair, to his colleague Cæsaru, 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, and they began to fear for the safety of the republic which they had witnessed under Marius and Sulla. But Caesar by his moderation won the hearts of all. From Brundusium Pompey fled to Dyrrhachium in Epirus, which he strongly garrisoned and fortified, while Caesar established his power in the West, and forced the Senate to be more conciliatory to him than any other he 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 opposition of his colleague Cæsaru, and with those of his own party. To protract the battle to Caesar, and others for not accepting the proposals of peace which Caesar repeatedly made to 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 Dyrrhachium; in a battle which ensued, Caesar 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 peace must first be cleared of the enemy, they urged 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 plain of Pharsalus. Pompey was defeated, 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, whither he had sent his wife Cornelia, and Cleopatra, after the 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, 48 B.C., and having given battle to Caesar, 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, hastened away. The murderers cut off the head of the body, cut off the right-hand arm, and cast it on the beach, where it was buried by a freedman and a veteran. Caesar, who arrived in Egypt three days later, shed tears at the
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 singleness of principle and purpose, 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 sympathise with him; for the people was his true 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 in his public life a true democrat, for 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. His real fame must rest 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 the immorality which prevailed in the courts of the Roman nobility, which was so abhorred by Cicero, the champion of virtue, and which was the source of such endless anguish, was confined to his matrimonial relations. His was a general acknowledgment that he did not enrich himself by extortion in his provinces, though no man had ever had more opportunities, and that he had done much for the advancement of public money. As regards his intellectual powers, he was not above mediocrity, although sometimes he appears to have been a patron of science and literature. Cicero judged of him differently, and, as for the 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. Many contemporaries think him majestic and imposing. (See the articles Cicero, Casar, Spartucus, Mithridates, and especially Pompey’s Life in Drummann’s Geschichle Rome, Jec., vol. iv., p. 324-556.)

Pompeius, Cneius Magnus, the elder of the two sons of the triumvir Pompey and of Mucia. He was born about 75 B.C. According to Appian, he and his brother Sextus accompanied 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 90 ships, and found that Caesar had been allowed to cross the Adriatic, he felt very indignant and went 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 that with such a fleet there could be no danger of a 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, did notelect young Cneius 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 in Africa with 4,000 men, and was soon 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 legates to negotiate. But in the spring of 46 B.C. the Senate heard that Cneius had crossed the sea. Caesar hastened to join him by sea. Cneius, not having crossed by land, was forced to cross the Mediterranean, and he found it necessary to follow himself. On the 17th of March, 45 B.C., Cneius was defeated in the bloody battle of Monsuda (Munda in Oranissa), and flying to Carthage, attempted to escape across the sea. Being thwarted in this attempt, he directed his steps towards the interior of Spain. His enemies followed, and overtook him in the neighbourhood of Laurum, where he was killed. Being naturally of a passionate and revengeful disposition, he died in an insatiable desire of revenge, and changed his natural boldness into a kind of savage asceticity. See the article Caesar, and the detailed account of the war in Spain in the book De Bello Hispanico.

Pompeius, Sextus Magnus, the younger son of the triumvir and of Mucia, was born in 75 B.C. At the time of the war with the pirates he was a boy of eight years of age, and when his father fought the battle of Pharsalus he was with him; and in 41 B.C., when he was 17 years of age, he was found among the prisoners kept by Caesar for the purpose of forcing his father to renounce his claim to the empire. When, in 40 B.C., he and his brother were admitted by Caesar to the command of the auxiliaries in Asia, they were appointed by him to lead the army in Cyprus. Caesar, who was sailing with the fleet to Africa, was captured by his legates, but escaped with his family and a few followers. After joining his brother, who had crossed to Africa, they were joined by Labienus and others from Spain to rejoin his brother, but were again captured by Caesar. After learning the unhappy issue of the battle of Munda, he left Corduba, and for a time wandered about as a robber in the country of the Lecanitii. A number of malcontents and fragments of the army of his brother soon associated around him, and with them he began to carry on a kind of guerilla warfare. Supported by the natives (Dion Cassius, xiv. 10), he took several towns, and neither C. Cærinius nor Asinius Pollio was able to come near him. He was now master of all Bithynia and a part of Hispanic Terraeconiscis, and assumed the title of imperator. The only object of Sextus, as he himself afterwards declared, was to be restored to his country and to recover the confiscated estates of his father. (Cic. Ad Att., xii. 4.) It was proposed in the Senate to recall him and to give him from the public treasury a sum of money equivalent to the property of his father. The proposal was supported by Antony; but Sextus, mistrusting the optimates as well as the rest, advanced with his forces as far as Massilia to watch the course of events in Italy. The Senate made him chief admiral of the fleet, but when Octavius, Antony, and Lepidus formed a league for its destruction, Sextus joined them as an outlaw. Being however supported by his fleet, he cruised as a privateer in the Mediterranean, and at last succeeded in taking possession of Sicily. The number of proscibed or ruined individuals and of slaves who fled to his standard increased daily, as his flotta, or fleet, when he arrived, was vastly increased, and offered for his head. He also received reinforcements from A. Cornelius, governor of the province of Africa. (Dion Cass., xlviii. 17.) Rome at this time suffered from scarcity, and Octavius sent G. Salvinius Rufus (42 B.C.) with a squadron, who however only succeeded in protecting the coasts of Italy. During the campaign of Philippi, Sextus remained inactive, confining himself to the defence of Sicily, and only harassing the coasts of Italy, whereby he increased the scarcity of provisions at Rome. When, in the spring of the year 40 B.C., Antony on his return from Egypt found the gates of Brundisium closed upon him by Octavius, he proposed that Pompey should assist him against Octavius. Pompey without hesitation sent a division of cavalry and a squadron to southern Italy. But the triumvirs soon became reconciled, and after concluding a fresh treaty among themselves (fœdus Brundisiumum), they determined to make war upon Pompey, who now refused to supply any more supplies from Rome. The city was thus thrown into such a state of suffering and discontent, that at last the people in open rebellion compelled the triumvirs to a reconciliation with Pompey, who declared war with Pompey and submitted with him to arbitration, in which he obtained the proconsulship of Sicily, Sardinia, Corsica, and Achaea, and promised to supply it with provisions. But this reconciliation proved to be but little more than a factitious one, for a few days after it was entered into by Pompey, who refused to give up Achaea, and Octavius sent a messenger to Pompey allowing him to be carried on in the Mediter
ranes. A rupture between Pompey and Octavian ensued, and Menodorus, the admiral of the former, went over to Octavian, and treacherously surrendered to him Sardina and Corsica. Octavian was now bent upon destroying the Pompian fleet, but his fleet was defeated by the waves of Pompey, 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 faithful Menodorus deserted to Pompey, his former master. M. Vipsanius Agrrippa 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. The latter then invited his enemies to desert to him, and offered to execute several sacrifices to Neptune, whose son he called himself. (Dion Cass., xlviii. 19; Horat., Epod., 9.) Menodorus again deserted Pompey, and in a sea-fight off Mylai against Agrrippa, Pompey lost 39 ships and was unable to prevent Octavian from landing at Taormenium. After several skirmishes, Agrrippa at length (36 B.C.) in a great sea-fight near Naupactus decided the fate of Pompey, who, when he heard of the desertion of his land-troops, fled with his daughter and 17 ships from Messina to Asia. He was not followed by Octavian, and found an hospital reception with C. Furius, the legate of Antony. But he soon lost the confidence of his host by sending secret envoys to the enemy. He then joined the army of Fides; contaminated by the open war broke out between him and Furius, and when Antony, who was at the time in Alexandria, heard of it, he sent Titius with a fleet of 128 ships against the dangerous general, who was taken by force of arms. After having taken his enemies and deserted by his troops, he surrendered, and was put to death at Mileutas (35 B.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 two armies.

 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 could have been requested to cease iniquity and could have recovered his property without it. In his undertakings he owed almost all his success to favourable circumstances and to the great reputation of his name, for he himself was neither active nor prudent. (Vell. Pat., 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, CINNUS.]

 POMPEIUS, TROGUS. [TROGUS.]

 POMPEIUS' PILAR. [ALEXANDRA.] 

 POMPILIO, according to Latrēuû, a genus of Hymenoptera insects of the section Fossories and family Sphegidae. In the systems of Dr. Lasch, Mr. Shuckard, and several others, Pompilus is a genus as Lasius as a family. Pompilus, 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 jointed segments; and often of several; palpi as fleshy as at least as broad again as long; its posterior margin arched; abdomen ovoid, without any long petiole at the base. The Pompilids 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 Pompilus. These insects burrow in the ground, preferring sandy situations, and store their cells with spiders, which constitute the food of the young. In the genus Pompilus, 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 submarginal 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 Fossilary Hymenoptera, describes eighteen species.

 Besides Pompilus proper, the genera Ceroples and Apanteles are equally remarkable. An account of these genera and of the English species they contain will be found in Mr. Shuckard's work.

 POMPION. [POMPIN.]

 POMPONIUS SEXTUS, a distinguished Roman ju-

 rist. His age may be approximated to from several circumstances. He is supposed to be the Sextus mentioned by Gaius in connection with Julius (i. 218). In the extract from the 'Liber Singularis' of the 'Encheiridion' of Pompion (Dig., i. 9, 18) there is a reference to the various Roman jurists, ending with Saliurnus Julianus, from which circumstance it may be concluded that he was at least younger than Julianus. A difficulty however arises from the fact of a Sextus Pompionis often cited by Julianus (Dig., iii., tit. 5, s. 6), and from there being kept both a Sextus Pompionius and a Sextus and a Pompionus (Dig., xxx., tit. 1, s. 32). Sextus Pompionius is cited by Pompionus. (Dig., xxvii., tit. 5, s. 41.) On the whole it appears likely that Sextus and Pompionus were two different persons, one of whom was sometimes simply called Sextus. But if there were two, it is difficult to say when they respectively lived or what they respectively wrote. Pompionius survived the emperor Antoninus Pius. (Dig., i., tit. 12, s. 14.) In one passage he calls Gaius (Dig., xiv., tit. 5, s. 39) 'Gaius noster.' From all these circumstances it may be concluded that a Pompionius lived under Antoninus Pius and survived him. If there was a Sextus Pompionus, he was older than Pompionus. The works of Pompionus cited in the Florentine Index, are thirty books 'Ad Q. Muciam Lecionum,' thirty-five to Sabinius, twenty books of Epistulae, fifteen books of Variae Leciones, seven books to Plautius, five books of Terentius, five books of Silius, five books of Regole, and two books of the Encheiridion.

 The 'Encheiridion,' as extracted in the 'Digest,' is called 'Liber Singularis.' It contains an historical sketch of the Roman Emperors, and a collection of the civil and criminal law writers to the time of Pompionus, in which it is also mentioned what writers respectively belonged to the schools of Aurelius Capito and Labeo, who lived in the time of Augustus, and were the founders or heads of two separate schools (scholars).

 POMPONIUS MELA. [MELA.]

 POMPTINE OR PONTINE MARSHES (Pulati Fontine, in Italian) is the name of a low marshy plain in the Papal State, about 24 miles long from north to south, and 10 miles 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 downs from 30 to 60 feet high, which begin on the south at Mount Cicero, an insulated calcareous 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, which is partly covered by forests and partly occupied by lagoons. This belt has no water communication with the basin of the Pomptine marshes. From Mount Cicero eastward to Terracina, another ridge of downs which runs to the sea-coast, and is cut through by the canal called Portatore di Badino, which is the great outlet of the waters of the Pomptine marshes. On the north and north-west the Pomptine marshes border on the sea, and although cut by many springs and torrents, from whence the general slope of the surface is to the south-east, in the direction of the length of the marshy plain, on the 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 raised from 18 feet to 20 feet above high water mark. The extent 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 are, one beginning from the north,—1. La Tepia, a muddy stream which rises in the heights of Giulio and Cori, east of Velletri; 2. the Ninfà, which has its source at the foot of the mountain on which Norma is built; 3. the Lavena, a marine stream, issues from a small lagoon near Scanno; 4. the Ufente, a clear perennial stream which rises at the foot of the Monti Lepini, near Casennuove, not far from Sessa; 5. the Amazzano, which rises in a deep valley of the Monti Lepini, called Vallecorsa, and drains a great extent of the territory between the two branches of the Pomptine plain by a narrow defile below Piperno; 6. the Podicata, a smaller stream which rises in the mountains of Sonnino. The French engineer Prony demonstrates in his able work (Description Hydrographique et Historique Sui
des Marais Pontines, 4to, with an Atlas, Paris, 1822), that
one-half at least of the water which flows into the plain of
the Pomptine marshes is derived from subterranean drain-
ings of the more elevated neighbouring basins of the Suco-
co, the three rivers which, according to modern geology,
are supposed to have been totally

There is every appearance that the basin of the Pomptine
marshes was once a gulf of the sea, which has been filled
alleviation of the land. The oldest
historical records exhibit this tract as occupied by the
Volsci, who had numerous towns, some of which were
situated in the most marshy part of the country. One of
these towns was called Suessa Pompetia, which was destroyed
by Tarquin the Proud, is supposed to have given its name to the
whole region. The country was evidently very fertile, for we
read in Livy (iv. 25) that in the year 322 of Rome the Ro-
mans in a season of scarcity sent to the Pomptine ager for
a supply of corn. In the years 347-8 the tribune L. Sicius
proposed a distribution of the lands of that district among
the poorer citizens. About 442 of Rome, the censor Appius
Claudius Caecus constructed the first road, which became
his name. On the north of the Pomptine region, the soil
of which must have then been sufficiently compact to bear
the great weight of the customer. The level of the original
ground on which it has been constructed has been found to be
about 12 feet below the sea-level, and about 12 or 15 feet
from the coast. But on arriving at the foot of the rock of
Feronia, Appius found that if he continued the road in a
straight line, he must pass through a soft marshy tract, and
he was induced to deviate from the direct line in order to
avail himself of the more solid ground which lay near
the foot of the Monti Lepini. At some period of the
century and a half that followed the building of the Appian
way, the country seems to have undergone great expan-
sion, and the peasantry of the civil capital have been
partly inundated, for we find the consul Cornelius Cethegus,
in the year of Rome 592, applying himself to the draining
of the marshes and restoring the land to cultivation, and it
was then that new towns arose on the ruins of the ancient
towns of the Volsci, under the names of Tres Pontes, Tres
Tabernae, ad Medias, &

The civil wars and the devastation which accompanied
them again caused the hydraulic works of the Pomptine
marshes to be neglected, until Augustus made or restored
several canals, especially a navigable canal which followed
the line of the Via Appia, and upon which Horace per-
formed part of his journey to Brundisium (Sat. i. 5). Nero
and Vespasian also made great improvements, and Antoninus Pius
constructed a port at Terracina. After
this we find no more records of the Pomptine marshes till
the reign of Theodoric, who turned his attention to the
drainage of the marshes and restoring the land to cultivation.
And it is said that Antoninus Pius
Decius with the execution of his orders. After that
epoch we know no more of the state of the country until
the end of the thirteenth century, when Pope Boniface VIII,
whose family, the Caetani, were feudal lords of Sermoneta
and of the greater part of the Monti Lepini, constructed
some works for the drainage of part of the marsh. Leo X.
employed the engineer Giovanni Scoti to repair and en-
large the canal of Badiano, which is still the
principal one. Sixtus V. constructed a lateral canal, which
running nearly parallel to the Via Appia, receives the wa-
ters of the western part of the marshes and carries them to
the common marshy of Badiano. This canal is still called
Fiume Sisto. Notwithstanding this, the Pomptine marshes
were in a deplorable state when Pius VI. ascended the
pontifical throne in 1774. All the canals were encumbered
with mud, about 60,000 acres were under water, the Via
Appia was filled with alluvium, and the vast extent of the
few sickly fishermen were the only inhabitants of the re-

Lalinde, in his 'Voyage en Italie,' gives a lamentable
description of the appearance of the country in 1766. In
1777 Pius VI. after having consulted Boesovich, Ximenas,
Malcocchi and other hydrologists and engineers, on the
work of removing the Pomptine marshes to Rapini, an engineer of Bolognas,
who had acquired a reputation by his hydraulic labours in the
territory of his native town. The pope began by pur-
purchasing that part of the ground which was entirely covered
with water from those who had prescriptive rights to it.
He then suggested to Rapini, in a letter dated 17th of
January, 1777, that the best plan of drainage would be by
digging a capacious canal along the whole length of the
marshes and by the construction of the lenticular work, which
should be restored at the same time. In 1778 the works
began. Rapini began by clearing the canal of Ba-
dino as far as where it meets the Via Appia, and he then
proceeded on his work, which could only be carried on dur-
ing the winter and spring months on account of the pes-
tential air of the summer months, he had the satisfaction of
seeing the first rice plant emerge from the waters of the Via
Appia, with its arches and bridges, emerge from the stag-
stant 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 Forum Appulii at the upper
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
depth, and is embanked the whole length.

Rapini afterwards cleared the lateral or western canal,
called Fiume Sisto, and introduced it into the waters of the
Ninfa and of the Teppi from the upper part of the marshes.
This improvement, which diminished the course of nearly 30 miles
in length, is from 20 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
Amazone at Ponte Muggiaccio, after which the united
stream enters the Gran Sasso of Monte Pellegrino. The
Botte, were excavated parallel to the main canal, with cross
cuts at the distance of one mile each, which open into the
Linea Pia so as to drain the intermediate space.

Lastly, a branch of the Portegetic, or great emisary, was
made to run into the port of Terracina in the shape of an
embanked and navigable canal. All those works, which
lasted about fifteen or sixteen years, cost Pius VI. only nine
millions of francs. As far as the main line of the
working of the works of the Pomptine marshes, and 200,000 francs were granted annually for the
purpose of draining them. A fresh embankment of the
Amazone, a rapid current, was effected, and the interme-
diate 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 works of Q. Consus and Q. Rio Martino, but which probably dates from the Roman times.

This canal is cut across the western banks, and affords a
direct communication between the middle part of the
marshes and the river Ufente. It is 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 emisary of the Teppi and other streams
which flow through the upper or north-west part of the
marshes, and which are now apt to encumber the canal
called Fiume Sisto with their deposits. But Prony objected
to this plan, because he thought it necessary not to dimi-
nish the current of water which runs out through the
marshes, and which is so necessary to the navy of Consune.
Consequently the canal remained useless. Since the Restoration, all that has been
done for the Pomptine marshes has been to maintain
the drainage in the state in which Pius VI. left it, by
keeping the canals clear and the works in repair. The
greater part of the plain is covered with rich pastures,
in which are fed numerous herds of horned cattle, and other
parts of it are sown with rice, wheat, and Indian corn, and
enclosed richly with fruit, and flowery plant.

In the same place the atmosphere is wholesome, it has the appearance of 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 the
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 are
found in the works of Prony; Nicolai, De Bonificamenti delle Terre Pontine; Bolognini, Memorie dell'antico e presente Stato delle Paludi Pontine; and Tourneour, Etudes Statistiques sur l'Italie.

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 Leonora Nuñez de Arce. While Orando was a lad of ten years, he 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 castles of the peninsula, and the qualities of his character and the genius which infused into him the greatest ability and personal courage. When scarcely seventeen years old, he obtained at Madroño a victory over the Moors, accompanied with a signal display of personal prowess. He has styled, according to his suit with great kindness, and gave them a large quantity of gold. With these good tidings Ponce returned to Hispaniola, and obtained from the governor's permission, as well as the necessary supplies, to undertake the subjugation of the island. On the 25th of August, 1487, however, his patron Orando was recalled, and succeeded by Don Diego Columbus, who deprived Ponce of his command, and appointed another governor over the island. In the mean-while, Columbus had now returned to Spain, having made a favourable representation of his merits. Ponce was re-appointed in 1509, and entrusted with the conquest of the island. After many hard-fought battles with the natives, who proved to be far more warlike than those of Hispaniola, with the consent of the conquistadors, an expedition was made, and in a skirmish, Ponce completed the subjugation of the island; notwithstanding which he was again deprived of the command, and replaced by Juan Ceron. Inexorable of quiet life, Ponce soon turned his thoughts to the scenes of conquest. He appears to have conceived the singular idea that there was yet a third world to be discovered, and he hoped to be the first to reach it; but as he was then in the early days of his life and his constitution had been very much impaired by the fatigue and privations of former voyages, he decided to sail first to a certain island of the Bahama group, called Bimini, where, according to a tradition current among the natives of Puerto Rico, where he was born, there were still traces of the youth. In search of this marvellous fountain Ponce sailed, on the third of March, 1512, from the port of St. Germain in the island of Puerto Rico. Having arrived at the island, he conquered all the islands, one after another, and drank of every fountain there was, to be found; but his inquiries for the island of Bimini were all in vain. Ponce however was not discouraged; and after repairing his ships, he again put to sea, and shaped his course to the north-west. In this way, on the 27th of March, he came in sight of what he supposed to be an island, which, from the circumstance of its being discovered on a Palm Sunday, and the ground being covered with flowers, he named "Isabella," in honor of his patroness. Thinking it to be the possession of the country in the name of Ferdinand and Isabella, and again started in search of the desired island; but after some months of unsuccessful cruise, he returned to Puerto Rico, and thence to Spain, where he arrived in 1513. Having made a report of his adventure to the king, he was appointed Adelantado de la Florida, and in 1514 entrusted with the command of an expedition fitting out at Seville against the Caribbes. This however took a long time to organize, as Ponce was in Spain until 1519, when, being boused by the fame of the recent exploits of Cortés [Cortés], he again fitted out two ships, and, having embarked almost the whole of his forces, started from this port, and landed in the western coast of Florida, where he made a descent; but the Indians sallying forth to defend their shores, several of his men were slain, and himself wounded by an arrow in the thigh, of which he died soon after, at Cuba, in 1519. (Herrera, Historia de las Indias, dec. lib. ix. cap. viii.; Navarrete, Colección de Viajes y Descubrimientos, &c., vol. iii.)

PONCE, PEDRO, a Spanish Benedictine monk, in the convent of Oliva in Old Castile, was born about the year 1530. He is considered the inventor of the art of teaching the dumb to speak, which he carried to such perfection as to make us doubt whether Braidwood, 1 judges, Sicard, and others accomplished more. [See Notes.] According to Ambrosio Morales (Antiguiedades de España, Ali- cali, 1575, fol. 38), Ponce had to instruct two brothers and one sister of theConstable of Castile, and a son of the Grand Justicia of Aragon, all of whom were born deaf and dumb. These pupils made such progress, that although they could not only were able to write correctly, but also to answer any questions put to them. One of them, Don Pedro de Velasco, who lived to be only twenty years of age, spoke and wrote Latin at the age of fourteen. The time of his death making considerable progress in the Greek language. His own account of himself is thus recorded: 'When I was a child, I knew nothing; I began first to write down the nun's lessons, and then I showed them me, and afterwards I wrote down all the cases in a book which was made 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,' &c.
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 be of universal attention 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, b. 8), says that the Pope he spoke to, was no less any man whatever; and I have often discoursed with him whiles I waited upon the Prince of Wales in Spain.' According to the same author (p. 254) and to Juan de Castellanos ('Vida de San Bonito'), Ponce wrote a treatise in Spanish, in which 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 Bonoto, who wrote his 'Reduction de Letra, y manera de enseñar a hablar los Modos,' 1629, 4to., saw and consulted it. Ponce died in 1584, and was buried in the convent of his order.

PONDE, JOHN, was born about 1576, 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 be absent from the degree, he acted as secretary, and in that capacity, at Westminster, as ambassador, he resigned his post, and died September 7, 1586, 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 whom 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 his residence at Cambridge; and he made the opportunity 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 astronomy which interested him, and in which he devoted his subsequent life was the determination of the places of the fixed stars; and in knowledge 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 handler 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.'

This brought Mr. Pond into notice as an astronomer was the following:—when at Westminster, he became possessed of an altitude and azimuth circle by Troughton, and undertook a series of observations, from which he deduced ('Phil. Trans.,' 1669) that the quadrant they were using was contaminated for the declination had changed its form since the time of Bradley: a result which Troughton verified by actual measurement of the instrument. A circular circle (called Troughton's, from its maker) was accordingly ordered, in place of the quadrant; but it was not erected till 1682, 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 succeeded in his place at Greenwich. This circumstance would peculiarly connect his name with the mural circle (which 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 the great advantage the construction of the mural circle 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 1668, a circle was made by Mr. Jones, and intended for the Cape of Good Hope, was sent to Greenwich for examination. 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 suggested by Troughton; and, at his request, the circle intended for the Cape was retained at Greenwich. Mr. Pond is also the inventor of the method of observing in groups, described in the article Cape of Good Hope, and it is also to be noted that he was the very first astronomer who advocated what is now the universal practice, of depending upon masses of observations for all fundamental data.

In 1633 Mr. Pond had finished his standard catalogue of 1113 stars, the young lord to whom he had dedicated it had any pretension to the same degree of accuracy. The controversy between Pond and Blinkley on the parallax of the fixed stars is a matter of history, on which it only concerns us to state that Mr. Pond, in his 'Two Treatises,' 1669, and it is clear that the former was right in his assertion that the latter did not prove the existence of a sensible amount of parallax. ('Pallad.'

The works of Mr. Pond are: 1, the volumes of Greenwich Observations, published during his astronomy; 2, various Papers in the Transactions of the Royal and the Royal Astronomical Societies; 3, a Translation of the 'Systeme du Monde' of Laplace. His astronomical writings are condensed, and not addressed to any but those who have a thorough acquaintance with the subject. There is nothing of a popular nature in the usual work of an astronomer; so that while few except astronomers knew more of the subject of this article than that one John Pond, in whose name the works were published, as a royal, the following is the testimony of the Astronomical Society:—'It is not too much to say that meridian sidereal observation (which excludes the Hermetic branch of the science) has been as persistent in the minds of such of his countrymen put together since the time of Bradley.'

PONDICHERRY, a considerable town on the sea-coast of the Carnatic, in Hindostan, formerly the principal seat of the French in the East Indies, 57° 57' 34" E. long., 15° 16' 44" lat. 79° 24' E., 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); and the vessels were wrecked on the Maldives before reaching their ultimate destination, and their commander returned ten years afterwards to France. A company of merchants sent out some vessels from a port in Normandy to Java (a.d. 1616 and 1618), 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 merchants fitted out vessels and made several voyages. A company, established a.d. 1612, formed some settlements in Madagascar, but these in a few years dwindled almost nothing.

In a.d. 1664, Colbert presented to Louis XIV. the plan of an India Company, which received the royal sanction. This was the first attempt by the new Company to establish settlements of Madagascar; but this attempt having failed, they turned their attention to the establishment of factories in Hindostan, and fixed the principal one at Surat on the coast of Gujerat (130 or 140 miles north of Bombay). It was not till 1666 that the Company had possession of Hindostan. Finding however that the competition of nations of more commercial character, and whose credit is the East was more firmly established, placed them at a great disadvantage, the French adventurers left Surat, and, supported by a strong squadron sent out from Europe, attempted to form an independent settlement at Trincomalee on the west coast of Ceylon (a.d. 1672). From this place they were twice attacked by the Dutch, which was in consequence of their having, while retreating to the coast of the Carnatic, they took by assault the Portuguese settlement of St. Thomé, or Malaplaor, not far from Madras, from which they were again expelled (a.d. 1674), and the wreck of this unfortunate expedition took refuge at Pondicherry, which had been formed into a settlement about two years before (a.d. 1673), of the king of Vizian- poor or Bejapoor. (BEJAPPOOR.)

In following years they attempted to establish themselves in Siam, and, erecting forts on the coast, they directed their chief attention to Pondicherry, which they strengthened with considerable fortifications. It was taken by the Dutch (a.d. 1693), but restored at the peace of Ryswick (a.d. 1697) with the fortifications greatly improved. The town at this period was once more the capital of a kingdom, and the seat of a prince. In 1734, the town was the seat of a prince. In 1734, the town was the seat of a prince. In 1734, the town was the seat of a prince. In 1734, the town was the seat of a prince.
which the establishment had been formed, were going to ruin, through the mismanagement of those who directed it; the severe measures of the Company on the war 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 be known as the British East India Company, of whose directors, charging the firm 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 when its fortifications were completed. 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 peace of 1721 the Carnatic was 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 payable by the Company to 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, which had not performed the port of London for seven years, were given up to the government; which undertook, in turn, 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 1763 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 Hindustan was now decided. On the breaking out of hostilities between England and France in 1778, 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, and thus deprived Europe of their assistance. 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 British at Seringapatam and Trirumala in Ceylon, which the English had just captured 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 1799 they were again conquered by the English, under General Amiens; again conquered in 1803, and again re- stored in 1814. The possessions of France in the East Indies now comprehend Pondicherry and Karaul, with their dependencies on the Coromandel (or Carnatic) coast and the factory of Mansull-pariam in the Northern Cireaus; Chanderbag and its territory, with Gooerti and some other factories, in Bengal; and Madh, 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. (Mauritius.) Pondicherry, which is a sandy plain not 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 shaded by shady trees, the houses are heritably high, and have flat roofs; they are covered with stucco, white or yellow, and are adorned with fore courts or gardens. In the centre 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 debauched by treaty from restoring the fortifications, or from maintaining any force beyond what is necessary for the protection of the town and its outposts. It contains a spacious house on one side of the 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 his clergy; the convent was destroyed by the English on the capture of Pondicherry in 1761. There is a grand pagoda on 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 trade with the island. There is no harbour, but a tolerable roadstead. Indigo, 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
imports are lace, and articles of dress, furniture, jewellery, and books. There are two courts of justice, a mint, a col-
clege, schools for whites and for blacks, a botanical garden, a mont de piété, or office for small loans, and several chari-
tau salaries.

PONGO, an African word supposed to be corrupted from Boggo, and said to be applied indifferently to the Chim-
panzees, the Mandrill, and the baboons of that country. Boggo has been the name of a large and power-
ate a gigantic species of Orange-Utan. Audebert restricts the appellation to the Chimpancees. Wurmb first de-
initely applied the term to the Pithecus Wurmbii. Cuvier, togeth-
er with many modern zoologists, followed Wurmb in his
application. M. Swainson (Classification of Quadrupeds),
speaking of Pithecus, says, 'This is the remarkable animal
called Pongo by M. Wurmb; an ape, about whose natural
station great diversity of opinion exists.' M. Cuvier places it
in its own genus; and since a single species is found, the
latter is merely the young. Illiger, on the contrary, consi-
der it so closely allied to the baboons, that he calls it a
Cynocephalus. From these opinions we may draw the in-
ference that it is intimately connected with both, while subse-
quent 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 natural or sign of the adult
orang-utan, Pithecus Wurmbii. [Pithecus, Pongo, Wurmbii,
Species, Pithecus, Orang-Utan, Wurmbii.]

PONIATOWSKI, STANISLAUS, COUNT, a Polish
nobleman, born in 1678, who took the part of Stanislaus
Leckziński of and his protector Charles XII of Sweden,
against his own country, and was exiled, 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 milita-
arily 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 Constanti-
nople as his agent, to forward his interests with the Sultan.
He beheld with pleasure the difficulty and danger of his
exile and the resources of a 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 Ports 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 Leckziński, the protégé
of Charles, who had been driven out of Poland by his
sister's husband, the Russian
sian party. 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 the court of Augustus, where he not only restored
him to his property, but made him 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 Leckziński, 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 1752, castellan
of Cracow, which was one of the highest dignities in the
kingdom. Some time after he retired to his estates, where
he died in 1762. He married a Princess Czartoriska,
by whom he had two sons, one of whom became after-
wards king of Poland [STANISLAUS AUGUSTUS], and the
other entered the Austrian service and became lieutenant-
general of artillery.

PONIATOWSKI, JOSEPH, PRINCE, born at War-
saw, 1725, and son of Andreas Poniatowski, lieutenant-
general of artillery in the Austrian service, and nephew
to Stanislaus Augustus, the last king of Poland. He en-
tered the Austrian service, and became colonel of dragons
and lieutenant-general of dragoons, with whom he
made a campaign against the Turks in 1787. In 1789 he
returned to Poland, where he showed himself a warm sup-
porter of the independence of his country. He fought against
the Russians in 1792, but was obliged to resign his command in
consequence of the king's weakness and partiality
for Russia. In 1794, when the Poles again rose against the
Russians, Joseph Poniatowski served under Kociewsko, but
Kociewsko being defeated, he was obliged to emigrate, and
he retired to Vienna.

In 1799 he returned to Warsaw, which was then under
depression 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 ad-
vanced towards Warsaw, and Poniatowski was
pointed out 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
Gambetta, for which he was rewarded with a
fondness for his people and his
At first he would not accept any service under the
French, until Napoleon, having arrived at Warsaw, cajoled
the Poles with fine though vague promises, talking, in his
own characteristic style, of 'the destinies of Poland being on
the point of being changed.' &c. &c. and
formed 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 retained 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
advanced to the support of the new emperor. Thus born
war broke out 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
retired 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. Poniatowski retired to Russia 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, entered Moscow with Napol-
eon. At the same time he maintained the strictest dis-
cipline in his corps, which did not share in the excesses
committed by other portions of the invading army. In
the disastrous retreat from Moscow the same corps distinguished
itself by its orderly behaviour. Being obliged to evacuate
Warsaw, Poniatowski withdrew into Saxony, and in the
following campaign of 1813 Napoleon gave him the com-
mand of a mixed corps of French and Poles. He fought with
his usual bravery in various battles, and was made a
marshal of France by Napoleon just before the battle of
Leipz. A few days after, on the 18th of October, while
protecting with a handful of men the retreat of the French,
he was killed by a cannon-ball on the banks of the river Elster,
which was defiled 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 confusing 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 regaining its indepen-

PONIATOWSKI, COUNT, [CHARLENE INFERIORIER.]
PONIATOWSKI, [1752, castellain.]
PONT-A-MOUSSON, [LAVOIO, TERRA DL.]
PONTE. [BASSANO.]
PONTEFRAC'T, an ancient borough, a market-town,
township, and parish in the upper division of the wapen-
take of Osgodcross, in the honour of liberty of Cantebur,
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, Shincliffe, and a part of the township
of Pontefract. The collection of Pontefract Park, which is extra-parochial, form the parish of Pontefract, contain nearly 10,000 inhabitants
and send two members to parliament. The parish extends
over 7790 acres. Pontefract Park comprises 1300 acres. The
market is held on Thursday, and a fair is held on
Ponfract, and has four aldermen and twelve counci-
ors. The honour of Pontefract belongs to the crown.

PONTO, [District of] The title to the recovery of a
hunting, under five pounds is held at Pontefract once in three
weeks.
and by adjournment thence, at Huddersfield, Bradford, Leeds, and Barnsley. The dectors' 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 history. It is said that the name is derived from the Saxon, which it is not improbable that it was one of the first places in England at which a church was erected and Christianity preached. It is the seat of the national school of the town, and is endowed with 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. He is said to have called it very one of the parts. 

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 commanded by any contiguous hill, and could only be taken by blockade. The wall of the castle yard was high, and flanked by seven towers. A deep moat was cut on the west side, where was also the barbican and drawbridge; there were also gates, which might be defended by the garrison, 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 acres.

Ibert de Lacy was a great favourite with William, and received from him a reward for his adherence and services one hundred and fifty men in the west of Yorkshire, two hundred in Hampshire, 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 1319, when, having no male children, he left his estates to his daughter Alice, who was married to Thomas, earl of Lancaster, uncle to Edward II. In the quarrel between that weak-minded prince and his nobles, the castle is rich is supply the population of 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 the temple should not be altered by individuals as well as by the state. Their original number, according to Livy (x. 6), was four, for each of the tribes of the Romans and Titus. Cicerone (De Rep. ii. 14) says that their number was five, but he includes the Pontifex Maximus, or chief pontiff.

The minor pontiffs were a college of priests of which scarcely anything is known. Cicero mentions three members of it (Harrup. Resp. 6), and Niebuhr (Hist. of Rome, i. note, 773) supposes that it belonged to the Loculi, 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 maiores: Liv. xxi. 47). Capitolin. Vit. Macr. vii.

When the great state offices had become accessible to the plebeians, they also obtained the privilege of being represented in the college of pontiffs by men of their own election. This seems to have been the case in 300 B.C. by the Oulquinian law, by which the original number of pontiffs, through the addition of four plebeians, was increased to eight, or, including the chief pontiff, to nine. (Liv. x. 6. 9). The chief pontiff, however, was 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 reduced it to seven. (Suet. Cest. 25.) A second Sulla added one more pontiff. ( Dion Cassi. xii. 72.)

In the early ages of the history of Rome the pontiffs were elected by the kings, but after the overthrow of the king the college exercised the right of co-option (Dionys. Hal. ii. 73; Livy, xvi. 36). The procedure of the pontiffs in referring persons to the office of pontiff was transferred to the people by the Domitian law: for, according to this law
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 abolished the college the full right of co-optation; the tribune Labienus indeed, in 63 B.C., revived the Domitian law, but it was again abrogated by Antony. (Dion Cass. xlvii. p. 395.)

The chief pontiff, who at first seems to have been a hereditary office, was afterwards elected by the curiae 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. (Liv. xii. 42, 43.) The functions of the college of pontiffs 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 more properly civil, such as marriage and adoption by adrogation (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., ii. 9; comp. with Liv. xxii. 57.)

The chief pontiff, whose office, like that of the other magistrates, 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 emperor. In cases where the pontiff was dead or his person severed (Liv., xl. 42), for the few instances of later times where a tribune interposed and modified the sentence of the chief pontiff, there seem to have been anomalies. He had no appeal over them, nor was his sentence made valid as far as they were concerned. He and the form, if acting contrary to the laws of religion, might be fined (Liv., xxvii. 51; Cic., Philop., xi. 5; Liv., xl. 42), or compelled by the chief pontiff to resign his office. It also formed part of his duties to regulate the calendar, and to interpret the ceremonial laws, for he and his college were the exclusive possession of the ritual books (commentarii sacrorum or libri pontificiales), in which all religious rites were laid down, and which at all times were considered as decisive upon any point which belonged to their jurisdiction. The rules and regulations which guided the pontifices formed a large body of law, called 'Jus Pontificum.' (Cic., De Or., i. 43; iii. 33; Pro Dom. 13.) The oath tended to a newly elected pontiff, not to profane the sacred rites by any untemperate publication, most probably referred to these books. (Dionys. Hal., ii. 133.) The chief pontiff had moreover to keep a kind of stationary residence (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 pontiff was also the controller of the curiae, which at the time of the pontiff had no religious grounds for preventing them, and their presence was indispensable at these meetings. (Gellius, v. 19; Dionys. Hal., ii. 41, comp. with x. 32.) Among the external distinctions of the pontiffs, were the toga praetexta, and the toga purpurea in honoribus, used in addition to the toga with an apex. They lived in public buildings on the Via Sacra (Suet., Cæs. 46), 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, according to the laws, she 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 all his successors to the time of Gratian, who disdained this dignity. (Zosim., iv. 36, 9.) The title P.M., or P. M. Pontifex 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 the priests of modern times. (Horat., Od., i. 14, 26, ff.; Martial, Epigr., xii. 48, 12;Macrobi., Sat. i., ii. 9.)

PONTIUS PILATE. [PILATE, PONTIUS.]

PONTOISE. [SEINE ET OISE.]

PONTOON, or PONTON. This term is employed by the French to signify any large or flat-bottomed boat; but in the following to those which are arranged in the formation of floating bridges for military purposes.

The conveyance of an army with 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 is not only an essential requisite to the carrying on of all operations successfully, but materially influences 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. The failure or delay here will of necessity 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 this case, depends on the power of passing the river with the least possible delay, and upon the 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 their retreat across a river, and of the victory which armies have received when rivers have interposed between them and the superior forces of an enemy. To take an example from modern warfare, it may be observed, that during the retreat of Napoleon from Moscow, had it not been for the extraordinary care used by the chief of the French engineers to preserve all the bridge materials requisite for the formation of a bridge, the whole of the army must have been cut off from its retreat. During the campaign of 1809, and that of 1813, the bridges were destroyed on the Rhine, in order to prevent any retreat to the Danube, and that which was 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 by the Persians and the Egyptians, who has preserved (lib. iv., 86) the name of the Greek engineer employed on the two first, has also given a full description of the last (vii. 36). He states that 360 vessels, anchored both at the head and stern, were disposed in parallel directions across the strait with their keels in the direction of the current, in order to diminish the strain on their cables; and that parallel to this line, but nearer the Archipelago, was another consisting of 314 vessels, similarly disposed. The vessels were connected together by cables, over which was laid a platform of planks covered with a bed of earth, and there was a rail on each side. Xenophon also relates (Anabasis, lib. ii., c. 4) that the Greeks, in their retreat, passed the river Aegeus, in the same manner. The Tigris, in the time of Tiglath-Pileser, was made navigable by the building of a bridge across it; and the Rhine at the battle of Fleurus, which was gained, in 1698, by the Maréchal de Luxembourg over the Prince of Waldeock. Mention is frequently made of pontoon-bridges, both in Germany and Russia in 1812, during the closing of the campaign, a few during the campaigns of Marlborough, and, from 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 this branch of service.

The pontoon employed during the war differs 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 were received behind the expected one 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 this manner, each, from one corner, was drawn out from each or every second or third pontoon according 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 depending upon the separated end 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 chces, flooring-planks, close together and perpendicular to the length of the bridge; and these were kept down by a riband or a plank, which was fastened over their extremities or made fast to the bridge below.

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 and upon this head of the subject, has to the length of the years, has devoted much particular attention to the subject of military bridges. The form of the old pontoons rendering them difficult to manage in the water, and the great weight of the structure, together with the necessity of carrying them from place to place by land, 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 be easily carried from one place to another, or laid down on the flat, 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 perpends, so that they may be readily carried by two men 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 heel, 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-vehicle is divided into two compartments by a partition; and small passages, by which the rafts can 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 different kind. In the Medway, Col. Pasley's pontoons have been occasionally employed in experimental operations; and cylindrical pontoons of tin, which were subsequently invented by Major (now Colonel) Blanchard, have lately been introduced in the service. These are of 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 advantage 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 under a hot sun; and should a surface of tin be stripped off, the pontoon is said to have been in use above 18 years.

In 1836 the comparative merits of Colonel Pasley's and Colonel Blanchard's pontoons were tried upon the Medway, where twenty-four turret pieces of artilliy, were made to pass over the river on bridges supported by vessels of the two kinds. The order of march was purposely such as to subject the bridges to the test under a hot sun; and should a surface of tin be stripped off, 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 are 28 feet by 6 in, a diameter of one of Col. Blanchard's being 29 feet 6 in. The length of each kind of pontoon 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 thus placed longitudinally, and the other perpendicular, equal to the number of baulks which are to support the chces or planks forming the roadway. A raft is formed with two of these pontoons, by placing them parallel to each other, at distances of 12 feet, and about 12 feet; the ends of two baulks, or transoms, as they 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 each 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 transoms, with their extremities confined between the cross-pieces nailed to the frames as above; the chses are laid close together above them, and their ends are kept down by the ribands, which are attached to the pontoons by ropes passing over them, and under the latter, at intervals. In those ribands are fixed rowlock pins, and, when the bridge is not formed, the ribands being then placed parallel to the road, the raft, or a part of it, may be moved on the water by the oars.

When the bridge is to be formed, a certain number of such rafts are rowed to their stations in a line across the river, the lengths of them being arranged to resemble the banks, and there anchored; the distances between the nearest pontoons in two rafts being equal to that between the two pontoons in each raft. Then each raft carrying the materials which are to make a platform over the water between itself and the bank opposite, and similar to that which is employed in laying down the platform of the raft; and from each of the extremities pontoons a like platform is extended to the shore of the river.

When the bridge is finished, a number of men attached to each raft of two pontoons, namely 1 non-commissioned officer and 6 privates, can dismantle two vessels and their stores from the carriages, launch them, and form the raft in a quarter of an hour. All the pontoons, and stores re-packed on the carriages in a quarter of an hour.

In order to convey the pontoons with an army, each pontoon, with all its accompaniments, on a four-wheeled car, is placed in a carriage 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 small 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 a rope stretched across the river; the rafts and chses 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. This bridge, fifty and a quarter fathoms long, from twenty to twenty-eight inches in diameter, were united by tins, and every ten were bound together at both ends by transverse braces, so as to form a raft, which, as all the large ends of the transoms placed transversely, resembles the vossieur of a bridge. All the vossiers, 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 half of the yeilding end (with a length of 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
PON 396 PON
road. The breadth of the river at that place is about 1080
feet. (Berard, "Equilibre des Forces." 4.)
A strong raft-bridge was formed by the Russians and
Prussians over the Elbe near Dresden, in 1813: one couple
of logs disposed perpendicularly to each other formed the
bottom of each raft; cross-timbers were laid above these;
and a third couple of timbers, each placed parallel to the
interval between two of those below it. The timbers were
well lashed together; a strong cable was
stretched across the river on each side of the bridge, which
was further retained in its place by masts and a round
arch formed at the base of each. While the British army
was serving in Spain during the latter war, the roofs of buildings
were occasionally taken to form rafts: the rafters served as
balks; and, for want of rafts, the roofs themselves were kept down
to the foundations formed of young trees split in two
longitudinally and tied by willow twigs.
A cask bridge is sometimes formed in the following manner:—a certain number of casks are tied in the shape by
springs of a river and mooring-boat, having their axes 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
pier and a light harpoon was made for the infantry each
cast 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 roved to their places in the
line of the bridge, formed 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 resorted to for the conveyance of troops and
supplies by means of what are 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 bages or pickets driven into the ground, and,
in a similar manner the infantry 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 baulks and covered
with cloth or felt. Each vessel 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 trestle-piers in the bed by
parts of the river and mooring-boat in the middle; but
just as the bridge was finished, the river swelled and carried
away the trestles. The boats were then converted into
flying bridges, to convey over the cavalry and artillery;
and were afterwards fitted for conveying
the infantry and pontoon and casks, the latter being taken from the
neighbouring villages.
For many interesting particulars relating to the passage
of rivers by various nations, see Sir Howard Dougall's
PONTO/PHILUS, Dr. Leach's name for a genus of
Shrimps (Eugene, Risso).—From Eric, born at Aarhus in Jutland,
was the son of Louis Pontoppidan, a clergyman who wrote
several ascetic works, besides a "Theatrum Nobilissimi
Danicae, in quo famillae illustrium heroem, aliquorum
generis ac virtutem eximium virorum genialium, recens-
entur," 2 vols. fol. Eric studied at Fredericia, and after
wards at Copenhagen, where he took his degree in divinity.
He was afterwards preceptor to several young noblemen,
with whom he was a third couple of timbers, each placed
minister of a country parish in Holstein, and in 1735 he
was numbered among the king's clergymen. In 1738 he
was appointed to a chair of theology in the university of
Copenhagen; and in 1747 he was made Bishop of Bergen
in a post in which he was the author of numerous works, both
in Danish and Latin, upon historical, religious, and anti-
quarian subjects. The principal are:—1. "Theatrum Daniae
veteris et modernae," 4to, 1739, his description of the
geography of Denmark, written in the language of the
Hansens of Denmark. The author afterwards treated the same
subject at much greater length in a work written in the
Danish language, 2. "Den Danske Atlas," in 7 thick
vols 4to, 1764. A commentary and anecdotes connected with
which give a complete and elaborate topographical descrip-
tion of Denmark, accompanied by maps, views, and plans of
the various towns, engraving of curious coins, inscriptions,
monuments, costumes, and other remarkable objects, with
an introduction to the history of the country, the genealogy
of its kings, and other particulars relative to its history. 3.
"Gesta et Vestiaca Danorum existimati," 2 vols. 8vo,
1750. In this work Pontoppidan gives the history 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 captivated by the ideas of the age, and has adopted
with critical discrimination. 4. "Annales Ecclesiastici Daniae," 4
vols. 4to, a good history of the church of Denmark.
5. "MarmorDanica selectiones," in fol., in which the
author compiles a great work. 6. The history of the
Danish school of modern literature, from the death of
Clement of Rome to the present time. This work
is a good work, which has been translated into German and
Italian, and is used in schools throughout all the Danish monarchy.
Pontoppidan died at Bergen, in 1764. His relative,
Christian Joachim Pontoppidan, published two good maps
of Norway in 1782 and 1795.
PONTO, or Pont's country of Asia Minor, derived its name
from the expression 'on Pontus Euxinus' (in Ponte),
and was used rather as a political than as a geographical
division of country. Under Mithridates the Great it included
a large portion of the territory which is now the European
part of Russia, Turkey, and Armenia. The place-name is
usually applied to the country between Colchis and the
river HalyS, and is consequently bounded on the west
by Paphlagonia, on the south by Cappadocia, and on the
north by the Black Sea, and is divided into four
districts, the Pontic, the Cappadocian, the Bithynian,
and the Phrygian. In the west it is bounded by the
Bosphorus and the Dardanelles, and in the east by the
Tigris (Yezdi-e-nrak) and the Troad of (Tereuch), and
affords good pasture for numerous flocks. The district of
Phanaros was considered the most fertile part of Pontus,
producing wine, oil, and many other things.
(Strabo, xii, p. 545.) On the south Pontus is separated from
Cappadocia by a long and narrow range of mountains
from the north-western part of Pontus is exceedingly barren,
and was inhabited by various barbarous tribes, of whom
Xenophon has given some account in the 'Anabasis.' The western
part of the country, which is a sheet of fertile, is drained by
the Iris (Yezdi-e-nrak) and the Thyenderon (Thermach),
and affords good pasture for numerous flocks. The district of
Phanaros was considered the most fertile part of Pontus,
producing wine, oil, and many other things.
(Strabo, xii, p. 556.)
The name of Pontus, as a separate kingdom, does not
occur either in Herodotus or Xenophon. In the time of
those writers the country appears to have been inhabited by a
number of various barbars tribes; it was only under the
royal kingdom by Ariobarzanes I., about the beginning of
the fourth century before the Christian era. According to
the concurrent testimony of several antient writers, Ari-
obarzanes I. was said to be descended from one of the
chiefs who overthrew the Magi, a. 521. (Florus, iii. 5;
Diod., xiv. 40; Polyb., v. 43.) Ariobarzanes was succeeded
by Mithridates I., and Mithridates by Ariobarzanes II.,
a. 363; but it was not till the reign of Mithridates III.
who succeeded Ariobarzanes, a. 337, that the kingdom of
Pontus acquired any degree of political importance. In the
troubles which followed the death of Alexander the Great,
Mithridates was enabled to extend greatly his paternal
dominions, whence he is frequently called the founder (tetrarch)
of the kingdom of Pontus. [MITHRIDATES II. I. Mithridates
died a. 392, and was succeeded by his son Mithridates III.,
who died a. 266, leaving the crown to Ariobarzanes III.,
who executed an attempt to conquer the Romans, and, in
the war against Eumenes II., king of Pergamum. Ariobarzanes
was succeeded by Mithridates IV., surnamed Euergetes, and
the latter by his son Mithridates VI., surnamed Eupator,
a. 129. The war of Mithridates with the Romans, which
ended in a. 63 by the conquest of Pontus and the death of
Mithridates, is given under MITHRIDATES VI.
Pharnaces II., the son of Mithridates, who had deprived
his father of the throne, was rewarded for his treachery
with the kingdom of the Bosporus and the title of an ally.
of the Romans. (Dio. xxxvi. 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 Deiotarus, tetrarch of Galatia. In the civil wars between Antony and Cleopatra, Antony, who had obtained his hereditary dominions in Pontus, but he was defeated by Caesar, in B.C. 47, and murdered after his escape to the Bosporus. (Suet., Cez., c. 33; Plut., Cez., c. 50; Appian, Cez., c. 91; Dio, xii. 75.) He had left a son, who was deposed, and the title passed to his son, who was made king of Pontus by Antony, in B.C. 39 (Appian, Cez., v. 73); but he was soon deposed and Ptolemy appointed in his stead. (Dio, xiii. 25; Plut., Anton., c. 35.) Ptolemy was killed in a rebellious conspiracy, and was succeeded by his widow Pythonis. (Strabo, xiii., p. 556.)

Pontus was reduced to the form of a province by Nero (54 A.D.), and the whole region was divided into the districts, called respectively Pontus Galaticus, Cappadocia, and Ptolemais. In the time of Constantine another division of the province was made; the western part, which included Pontus Galaticus and Cappadocia, being called Helenopontus after Constantine's mother, and the eastern part preserving its name of Pontus Ptolemais.

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 account is borrowed. For the belles lettres the reader is referred to Justinian's Digest.

After leaving Colchis, the first town of importance on the coast is Terebriz (Trebizon), a colony of Sinope. (Xen., Anab., iv, c. 22.) We learn from Arrian (Periplus Pont. Rhen. 27) that it was the ancient capital of Pontus and the residence of Terebriz (Trebizon) was also the capital of the town in the time of Hadrian. Tacitus also speaks of it (Hist., 47) as an antiquity and a flourishing town. In the reign of Gallienus, Terebriz was taken and plundered by the Goths, and it was divided among the provinces of the empire. It became the seat of a small empire under Alexius, a descendant of the Comneni (Gibbon's Decline and Fall, c. 61); and it retained its independence till the conquest of Constantine the Great. It has been stated that writers say that Pharnaces and Corios was two different places; but since the ancient Pharnaces is called at the present day Kerassos, there cannot be much doubt that they are the same place, after the express testimony of Arrian (Periplus) to the effect. Corios was a colony of Sinope (Xen., Anab., v., c. 3, § 2), and was probably the place from which Lucullus first brought cherries into Europe. (Ammian., xxii., 8.)

West of Cereus, on the coast, was Cotyora, an important town, the mouth of the river Sinope. In the time of Arrian it was divided between Pharnaces and Corios. (Xen., Anab., v., c. 3, § 6-5.) In the time of Arrian it was a small village, which was owing to the inhabitants having been removed to the more modern town of Pharnaces. (Strabo, xii., 25.)

West of Cotyora and also on the coast near the river Themodromos was Themiscya, celebrated in antiquity as the habitat of the Amazons. Themiscya 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 (Samosas), which, according to Theopompos (Cher. i., xii., p. 547), was originally founded by the Milesians, but subsequently received an Athenian colony, and was called Piraeus. It was greatly enlarged and beautified by Mithridates Eupator. (Strabo, xiii., c. 16; Ptol., v., c. 16.) The site of the town, which was taken by Lucullus, and subsequently came into the power of Pharnaces II. It was freed by Augustus from the tyranny of Straton, and in Straton's time it was in a flourishing condition. (Strabo, xiii., p. 547.) Pharnaces (v. 2) calls it 'Solomon,' which apparently indicates that in his time it had the Jus Ruticum. The most important towns in the interior were Amasia, Comana, Zeala, and Neoeraneses. An account of Amasia, which was the birthplace of Strabo, is given under Amasia. Comana, surnamed Pontia, to distinguish it from a city of the same name in Cappadocia, was situated in the upper valley of the Iris. (Strabo, xiii., p. 547.) It was a place of old, and a 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 courtesans. The office of high-priest was one of great honour and emolument. (Strabo, xiii., p. 557-559.)

South-east of Comana was Zeala (Zeala), an ancient temple, erected, according to Strabo (xiii., p. 549), on the mound of Daphne, at the foot of Mount Hymetia, and dedicated to the goddess Anaitis. The priest of the temple was also sovereign of the town. Zeala received an accession of territory from Pompey, and was made a city. (Strabo, xiii., p. 556.)

Neoeeraneses was built on the coast opposite Zeala and Comana, on the Lycaeus. 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 against the Parthians.

PONTYPOOL. (Monmouthshire.)

PONTZ, ANTONIO, a highly meritorious Spanish topographer and writer on the fine arts, was born in 1725, at Madrid in Spain. In 1760 he went to Paris, in the company of a number of artists who were persons of great respectability and considerable property, intended to bring him up for the church, and he was sent to pursue his studies accordingly, first at Segovie, and afterwards at the university of Valencia, at both which places he gained proofs of more than ordinary ability and application. Yet, though he made sufficient progress in theology to be able to take the degree of Doctor, he had very little relish for it, while he had a decided inclination for the fine arts. He left Paris in order to enter the church and to repair to Madrid, where he enrolled himself among the first pupils of the Academy of the Fine Arts. The course of instruction there given was not too methodical, towards the close of his studies, and after ten and nine years, diligently examining all the chief antiquities and works of art, and also acquired considerable skill in the practice of painting, so as to be able not only to support himself, but to collect a number of the most valuable publications on art as antiquity.

From Rome he was attracted, in 1759, to Naples, by the discoveries made at Herculaneum and Pompeii, and the treasures of art he there met with so excited his enthusiasm, that he determined to visit Egypt, and continued between nine and ten years, diligently examining all the chief antiquities and works of art, and also acquired considerable skill in the practice of painting, so as to be able not only to support himself, but to collect a number of the most valuable publications on art as antiquity.

From Rome he was attracted, in 1759, to Naples, by the discoveries made at Herculaneum and Pompeii, and the treasures of art he there met with so excited his enthusiasm, that he determined to visit Egypt, and continued between nine and ten years, diligently examining all the chief antiquities and works of art, and also acquired considerable skill in the practice of painting, so as to be able not only to support himself, but to collect a number of the most valuable publications on art as antiquity.

From Rome he was attracted, in 1759, to Naples, by the discoveries made at Herculaneum and Pompeii, and the treasures of art he there met with so excited his enthusiasm, that he determined to visit Egypt, and continued between nine and ten years, diligently examining all the chief antiquities and works of art, and also acquired considerable skill in the practice of painting, so as to be able not only to support himself, but to collect a number of the most valuable publications on art as antiquity.

From Rome he was attracted, in 1759, to Naples, by the discoveries made at Herculaneum and Pompeii, and the treasures of art he there met with so excited his enthusiasm, that he determined to visit Egypt, and continued between nine and ten years, diligently examining all the chief antiquities and works of art, and also acquired considerable skill in the practice of painting, so as to be able not only to support himself, but to collect a number of the most valuable publications on art as antiquity.

From Rome he was attracted, in 1759, to Naples, by the discoveries made at Herculaneum and Pompeii, and the treasures of art he there met with so excited his enthusiasm, that he determined to visit Egypt, and continued between nine and ten years, diligently examining all the chief antiquities and works of art, and also acquired considerable skill in the practice of painting, so as to be able not only to support himself, but to collect a number of the most valuable publications on art as antiquity.
berger of the Society of Antiquaries, London, and of several other learned bodies. Besides his principal work he published another in two volumes, entitled "Vigne fora de Ecosse," in which are with observations on some of the buildings in London.

PONZA, an island in the Mediterranean sea, on the coast of Naples, 20 miles south-west of Mount Cireone, and 36 miles west of the city of Naples. It is about 7 miles from one to two wide, and in shape like a crescent, the concave side of which faces the mainland of Italy. On the same side is the harbour, which is a natural basin with a narrow entrance guarded by high cliffs safe in all weathers. 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 in the possession of the crown, a small fortress with a 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 Ponza. It was colonised by the Volscians from the opposite coast, and became a possession of the Romans. About four miles west of Ponza is the smaller island of Palmarola, or Palmira, and two miles north-east of Ponza is an uninhabited rock called Zannone. About four miles south-south-east of Ponza, and between it and the island of Ischia, is the island of Vandotone, the ancient Pandataria, whither Julia the daughter of Augustus was banished by her father in consequence of her dissolute conduct. Octavia the wife of Neron to Pandataria in pursuit of her. In death she was ordered by order of her husband. Vandotone is about two miles long, and is inhabited by sailors and fishermen. East of Vandotone, and separated from it by a narrow channel, is the small island of Santa Stefano. The whole group of these islands is of volcanic formation.

(Foris, *Osservazioni Litografiche sull'Isola di Vandotone e Ponza,* in the 3rd vol. of the *Saggi Scientifici dell'Accad.*)

POOLE, a corporate town on the coast of Dorsetshire, in 50° 45' 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 Post OFFICE Railway to Southampton, and thence by Ringwood. The origin of Poole is unknown, it is supposed to have been an antient demesne of the crown granted to William Longespee, a natural son or descendant of Longespee of Longespee Hall, and after the charter to the burgesses of Poole, the date of which is not ascertained. This charter was confirmed by William Monteacute, earl of Salisbury, 45 Edward III., and by subsequent earls or by the crown. In 1164 Poole was a market town at the height of Edward III. in France. After this period it decayed, but in the reign of Henry VI. it revived. It is likely that its early prosperity depended upon the vigour with which the war in France was carried on. In the civil wars of 1643 and 1646 the principal fortifications were planned, but the town was resorted to by Spanish merchants. In the civil war it had a garrison of parliamentarians, who were troublesome 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 Durston-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 these several islands; one of them, Bowmans island, having an area of several hundred acres, handsomely laid out, and some good buildings on it. The town occupies a peninsula on the north side of the harbour, and consists of several streets laid out into principal of them running from north to south. The borough is co-extensive with the parish of St James, and comprehends an area of 170 acres. The number of inhabited houses was, in 1631, 1315, besides 76 uninhabited and building the number of families was 1126, and of persons 6459, besides 1119 mariners employed in registered vessels belonging to the port. The town had built in some parts the corporate limits, and it may be calculated that its population in 1821 (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 inlet of the harbour, on 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 a new and spacious new and rooms erected of late years, 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 here about 5000 inhabitants. The town, a 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 Newfoundland and other American colonies, and particularly the coasting-trade has considerably increased. The quays have been much enlarged and improved, and the harbour is one of the safest and best on the Channel coast. The number of vessels belonging to Poole has increased from about 250 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 coasters 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 93 in ballast. The number of registered vessels belonging to this port was 126. The clay found in the vicinity of Purbeck is shipped here for the use of the potteries in Staffordshire or elsewhere; from 25,000 to 30,000 tons are shipped yearly. A considerable trade in corn is also carried on; and there are building-yards for vessels of carrying and fishing. Poole is a large market, and is frequented by suitors to the various courts. There are three Sunday-schools and lending libraries attached.

The corporation of Poole, under the Municipal Reform Act, consists of 6 aldermen and 18 councillors. As the town is a borough, the town clerk acts as surveyor, and is 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 parliametary act. The mayor is elected by the burgesses for the borough are held, and a weekly Court of Recus, having unlimited jurisdiction in all cases, real, personal, or mixed. The sheriff holds a county court when necessary. Poole is in the diocese of South-Western, or the archdeaconry of Shaftesbury, and the deanery of Poole. The bishop of Bath and Wells is suffragan to the bishop of Salisbury. Poole is in the archdeaconry of South-Western, or the deanery of Poole. The bishop of Bath and Wells is suffragan to the bishop of Salisbury.

There were in the parish of St James in 1633 twenty-nine infant and day schools, with 425 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-schoools, with 395 children. In the year 1829, 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 useful book "Symposiocrinium Bibliorium." He was born 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 1662, in 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, and in 1669, he had exerted himself successfully in a scheme for the education of persons intended for the ministry, which was liberally patronised, of which, in 1658, he printed an account, in a book entitled "A Model for the maintaining of Students, and Abilities for the University, and principally in order to the Ministry." Being ejected from his cure, and prohibited from the exercise of his ministry, he had leisure to devote himself to the completion of the great work he had been 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' toil, was found in 1669. Two volumes appeared in 1669. These were followed by three other volumes, forming together five large folios, of which an extensive edition was printed. The work was perhaps as good as a work of the kind can be, and few will deny
that it is a very valuable and useful abridgement; but synopses and abridgements 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 use of students, the Biblical text which he may perhaps be said to be a convenient body of exegetic 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 1685.

He was also engaged in most of the controversies 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 in 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 earth, which in the clime of the two rivers Moula and Moula. It is about 80 miles south-east from Bombay, direct distance; in 18° 30' N. lat. and 73° 32' E. long.

The city is an extensive plain, or rather tableland, 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 British forces in 1818, many of them were crowned by hill-fortresses, 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 hollow, the general appearance of the surrounding plain is naked and desolate.

Poonah was formerly the seat of the Maharatta sovereignty, and the residence of the Peishwa. It is not a handsome city, nor apparently of a size to its extent must be considerable, since its population in 1819 was estimated by Mr. Elphinstone at 110,000, and Bishop Heber in 1823 was informed that it then amounted to about 100,000. The city is not walled, the buildings 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 Peishwa was a Mussulman, 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 1823 the ground-floor of the principal building was used as a prison, and the floor 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 a 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 (the dark goddess), 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 1828.

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 by the Maharattas 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, formerly 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 Maharatta war and of the successive Peishwas who resided at Poonah, see the article MAHARRATAS.

The great temple of Carlee, to which reference is made in the article AURANGABAD, is 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 the cliff which forms the temple is cut in the plain, and is approached by a narrow path winding up the side of the hill among trees and brushwood and fragments of rock. Besides the principal temple, there are many smaller apsaras, or galleries, with a mosaic, some of them beautifully ornamented. A mean and insipid temple to Siva serves as a sort of gateway to the cave, and a similar small building stands on the right hand of its portico.

The approach to the temple is under a noble arch filled up with a sort of portico screen. Two stories of intercolumniations below and five 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-relievo, with their heads, tusks, and trunks projecting boldly from the wall. On each of them is a rider, very well carved, and a palanquin, with two persons seated in it. The interior screen of the vestibule leading to the temple is covered with alti-relievi 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 large colonnades of large octagonal columns, 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 figures, one female seated, all with ribs of timber, which are not for support, but have a fine effect in the perspective of the interior. There is no image of Buddha or any other idol in this temple.

(Heber's Narrative of a Journey through the Upper Provinces of India in 1824 and 1825; Mrs. Poniatowska's Western India in 1838.)

POOR LAWS AND SETTLEMENT. A sketch of the early history of the English poor-law down to the 43 Eliz. c. 2, will be found in the article Eliz. It was convenient to subdivide the law as the statute 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 India, is entitled to certain relief, and the amount 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, in which the Poor-fund is fixed at 13s. 4d. a head, 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. (Owczarek.) 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 situated more than a mile from any parish, and these overseers were required to have certain particulars, such as the number of each sex, &c. The overseer was to attend once a week to the poor, and every inhabitant, parson, vicar, and other, and every occupier of lands, houses, tithes improper, proportions of tithes, coal-mines or saleable underwoods in the said parish, in such competent sum and manner, of whom they shall think fit, &c. according to the ability of the parish.

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
POO 400
POO

not anciently either a parish or a township. Many districts which 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, and the revenue, on principles of convenience, in either case to be called a parish, for any period not less than a week, but not exceeding a year. The rate, which is made in writing, gives the names of the persons rated, a description of the property for which assessed, the amount liable for each; 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 must be taken to be for their assessment, which 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 were resident 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 the term 'personal property' is used in a restricted sense; it describes not the occupier of the property, but the property, the nature of reality, 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 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 taxes and charges. The rate is calculated by the amount of the property, and may be increased by the rate of one shilling in every £100. The rate is imposed on the poor laws according to its strict legal sense, and that the occupier of a house is rated for it, although he has a mere chattel interest in it. The term 'personal property' is also used in a restricted sense; it describes not the occupier of the property, but the property, the nature of reality, 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 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 taxes and charges. The rate is calculated by the amount of the property, and may be increased by the rate of one shilling in every £100. The rate is imposed on the poor laws according to its strict legal sense, and that the occupier of a house is rated for it, although he has a mere chattel interest in it. The term 'personal property' is also used in a restricted sense; it describes not the occupier of the property, but the property, the nature of reality, 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 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 taxes and charges. The rate is calculated by the amount of the property, and may be increased by the rate of one shilling in every £100.

The rate that a pauper or pauper rate is, of course, of the nature of a budget, and is rated in such a manner that he is bound to the rate, and notice of appeal deprives the magistrate of his jurisdiction to distrain until the appeal is decided, unless the objection is solely on the ground of overcharge, in which case the appeal is to be allowed. The property was rated at in 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 of the parishes. There is no appeal, for instance, where his ground of complaint is that they have been under-rated.

The overseers, who in some parishes act under the direction of a committee of charity, are to be 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 making a request for relief, and in another sense, those who happen to be in the parish at the time of the rate being made. The poor is a common word, and is used in a legal sense, and includes all persons who would be bound to such paupers immediately, or, as it is called, casual relief. But if the same parish were bound also to afford continued relief to, or permanently to maintain, all the destitute who should come within it, the burden of supporting such persons would not be at all burdensome to the parish.

Paupers would then, influenced by their own fancy, or instigated to exonerate some other parish, have the power of fastening themselves for ever on any particular parish, or of robbing at pleasure from one parish to another in unrestricted vagrancy. The 13 & 14 Car. 11., c. 12, was passed to obviate these evils, and is the foundation of the present law which determines the parish that a pauper is to be included in. Paupers, as stated in the act, are to be kept in the parish where they have been 'last legally settled, either as a native, householder, sojourner, apprentice, or servant, for the space of forty days at the least.' Later statutes have greatly modified the heads of settlement here enumerated, and have added others; they have also made a pauper irremovable, until he has become chargeable to the foreign parish by receiving relief from it, either in person or through the hands of his wife or children.

The following are the settlements that subsist at the passing of the Poor-Law Amendment Act:—settlement by birth, by marriage, by service, by occupation, by pension, by ship, by tenancy, and estate, office, payment of rates. Settlements may be divided into two general classes; being, first, natural or derivative settlements, as by birth, parentage, or marriage; and secondly, acquired settlements, as by pension, by ship, by tenancy, and estate, office, payment of rates. Settlements which have been enumerated:—1, settlement by birth. In order that children may not be separated from their parents, the settlement of the father during his life, and of the settlement of the mother after his death, is irrevocable. But legitimate children who have no known settlement are settled in the place of their birth; so also are illegitimate children, for they can derive neither settlement nor any thing else from their parents. Children
however, during the age of nurture, which continues till the age of one year, the child is separated from them, and are therefore to be supported in the parish where their parents happen to be, at the expense of the parish of their birth settlement.

2. Settlement by marriage. - The settlement of the marriage, or, if he be unmarried, and without unemancipated children, or by the age of twenty-one, lives apart from his parents, or by continuous residence in the same parish, is considered a marriage for a year in the same service, and residing for forty days in any parish where his parents reside, or by the age of twenty-one, and, in general, that is a hiring where nothing is said as to the duration of the contract, is considered a hire for a year. The service for the year need not be wholly under the hire for hiring for any length of time, but it is sufficient if the residence for any part of the forty days be under the yearly hiring.

5. Settlement by apprenticeship is gained in the parish where a person bound by deed as an apprentice last completes a residence of forty days in his character of apprentice.

No service is required, but the apprentices during the necessary period of residence must be under his master's control. Settlement by rent of tenement is acquired by instituting persons residing in the parish, or renting, at least 10l. a year, payment of rent to that amount, and residence for forty days in the parish where the tenement is. By actual occupation is meant that part of the tenement must be under the residence of the tenant. Settlement by estate is gained by the possession of a house and to dwell therein, that the tenement and residence for forty days in the parish where the estate lies. If the estate come to a party in any way except by purchase, the value of the estate is immaterial; but a purchased estate confers no settlement if the price given was under 30l. But a person residing on his estate, whatever may be its value, is by Magna Charta irremovable from it while so residing, although he may have gained no settlement in respect of it.

8. Settlement by office or office of executing any public office in a parish, such as the office of constable, sexton, &c., for a year, and residing there forty days. The office need not be of a parochial nature, but must be at least an annual office. 9. Settlement by payment of rates. - In order to acquire a tenement a person must have been rated to and have paid the public taxes of a parish, in respect of a tenement hired at a rent of 10l. a year, and have paid that amount of rent, and resided forty days in the parish of the tenement. This head of settlement therefore includes all the requisites of settlement by renting a tenement, except the requisite of actual occupation.

All persons whatsoever, whether natural born subjects of England and Wales, Scotchmen, Irishmen, or foreigners, may be settled in a parish, or, if they come, if he be removed to the place where he last acquired a settlement. It is often very difficult to find out the place of such last settlement; this is so more especially in cases of emigration to the poor-rate, and it is the parish where the residence, being unconnected with anything of a fixed nature, as a tenement or office in any particular parish, may be continually shifting, the settlement consequently not known to it, until the last day of the service or apprenticeship. Persons who have not been 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 case they are to be kept under a separate order for relief, and the like, or to the county of their own country. When a pauper has become chargeable, and it is sought to remove him, it is taken before two justices, who inquire as to his place of settlement, and, if satisfied with the evidence, his place of residence as may be laid before them, make an order for his 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 appear that the pauper is settled upon his own application. The Poor-Law Amendment Act (4 and 5 Wm. IV., c. 76) has made no change in the law respecting the ratelability 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 three 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 vestry, unless in extraordinary cases. In these cases an overseer is bound to give temporary relief in articles of absolute necessity, but not in money, and, if he refuse, he may be required to do so by a magistrate's order, it is wasted by them.

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 exception above stated, the town or village relief is wholly withdrawn from overseers, these officers, from ignorance or corrupt motives, having been generally found incompetent to the discharge of so important a duty. They are still however entrusted with the making and collection of the poor-rate, which they are to lay over to the commissioners, and 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 such illness and danger as to render a person unable to work without requiring them to reside in the workhouse. Relief to able-bodied persons is regulated by the Poor-Law 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 to it to the discipline of a workhouse and to the solicitude of the guardians, that the man living upon the parish fund, is depressed, in point of comfort, below that of the labourer. Thus a ready test is applied to distinguish real and pretend 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 the 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 confusing the poor to their own parishes. The labourer himself, from attachment to old scenes and associates, was often unwilling to engage himself elsewhere. A man living upon the parish fund, lest, by acquiring a settlement there, he should incur, at some future time, a permanent separation from home: the farmer, on the other hand, had an equally strong objection to hire a strait 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 with any previously acquired. Settlements by office and by apprenticeship removed from the sea service or to a fisherman can no longer be acquired. Settlement by renting a tenement is clogged with the additional qualification that the occupier must have been assessed to the rate of the poor-rate for a term of not less than four years by estate, like any other settlement, when once gained, used to endure till it was superseded by some new settle-

P.C. No. 1153.
an additional book of 'The Duneald,' in which Clibber takes the place of Theobald, the original hero. About this time his health declined, and on the 30th May, 1744, he died of asthma and decay of nature.

To ensure that his effects of Pope would be a list of the great men of the time. One of his failings was to desire the acquittance of men of fashion, and his literary supremacy gave him that of men of learning, so that he was commended by the great, the humble, and the many, with whom he was quarreled; Swift, to whom he addressed the 'Dunciad,' Atterbury, on whose trial he appeared as a witness for the defence; Bolingbroke, to whom he is said to have owed the maxims of the 'Essay on Man; and Voltaire.

Pope's political and religious views, however, should have lived so long as he did, having both physical infirmity and hard study to contend against, with the addition of a violent temper, over which he had so little control, that he could not avoid showing anger by the very contumelies of his countryperson. Perhaps there is nothing in the history of literature more remarkable than the popularity acquired by Pope. To attain, in the estimation of a great nation, to the first rank among her poets, themselves the greatest which any nation has to boast, is no mean distinction; but that it should have been acquired on the strength of such poems as Pope has left, is not less wonderful. An enumeration of his principal works will show that, with one or two trifling exceptions, the author of the above-mentioned poems, and of some other writer. His 'Pastorals' are a mixture of Virgil and Theocritus, and have little to recommend them, except what is common to all the verses of his school, a beautiful style of expression, its flow of ideas, the attention by convention has received the name of poetry, but if by poetry we mean anything more than ingenious thoughts but into ornamented language, if poetry is indeed to be what the Greeks understood by it, a creation, we shall find little of it here. Even the 'Maiden,' beautiful as it is, has little claim to the title of a poem. Indeed, it professes nothing more than to be an imitation.

The 'Essay on Criticism' is worth notice, as, combined with Pope's 'Mercury,' had the greatest influence in promoting the prevailing style of versification in his time. That any man possessed of any measure of poetic spirit should be so tre傍bly alive to what others said of him, as in his second work to employ himself in canvassing the merits of critics and of 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 works, and that, however much he may think of himself as being 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 'Epistle to Dryden,' his literary fame was reduced, and his public life was at an end; the 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 the day. As for 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 credulity could never recur among us, for it requires a confined 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 booksellers favoured it, for nothing could be so convenient, in the present state of the nation, for the demand 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 considered as the town, the only literary tribunal then in being. 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 theory which succeeded the Restoration, and which the unpopularity of James 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 curious instance of Pope's omniscient authority is given in the notice of Surrsey.
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 curious also, as a memorial of that faith, which was to some extent given to the followers of Dryden, and to some great man, and in rehearsing patron's names and titles; all which follies Pope ridiculest, though at the same time be 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 version of Virgil's 'Aeneid,' which he first read of in Pope's English, and this in spite of his very frequent use of Chapman's version. All scholars will admit that Pope has Latinized the 'Aeneid,' a very prevalent fault in his day, when Latin held a place so much more important than Greek in the estimation of literary men. For his imitations of some parts of Chaucer this apology may be made, that those are considered by some men as part of the English language.

A remark, made by that of Mr. Wordsworth's 'Prioress's Tale,' shows what might have been done, but between Pope and Chaucer there is about the same difference as between a conservatory and a bank of wild flowers in a forest.

To the memory of Chaucer, and to the memory of the great Augustan age, it is desirable to be a philosopher, whence it was necessary for Pope to compose a philosophic poem. It might perhaps have been well to weight a little the consequences which theories like those of 'The Essay on Man' would have in practice, before making them the foundation of a system; but this was no part of Pope's scheme, and out of his materials, supplied, as is thought, by Bolingbroke,* he has written a poem, many lines of which are immortal, while the sentiments are mostly very mischievous, if not in some cases actually dangerous.

In his imitations of Horace, Pope has been most happy: indeed, where 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. In deed these are the characteristics which have given Pope his popularity. But they do not constitute poetry, nor is there any originality in them. It is a possession to be a poet. 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 important 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,' too 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 rhymerists 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 singing the satire must be. Theobald was the first hero of 'The Dunciad,' and owed his exaltation to having attacked Johnson. The misfortunes of Pope's edition of Shakespeare. 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 given by Dryden was entirely Ovidian graces in a translation, shows an ignorance 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 Colley Cibber. It is the success of Mr. Pope's 'Iliad' which gives us our own day, Dr. Johnson's own translations of Juvenal and Pope's of Horace only excepted. It thus appears that

* See the Preface itself, iv. 355.

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 note that the prose writer Pope is considered to have attained considerable merit. His style is elegant and cautious, 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 given the date of 1766; and 1766, London, 9 vols. There is a modern edition by Roseno, London, 10 vols. 8vo.

(...Johnson's Lives of the Poets; Wordsworth's Supplement to the Preface to his Poems.)

POP (Pope) was 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; Morel, Dictionnaire Historique.) Gregory VII., in a council held at Rome, a.d. 1076, decreed that the title Papa 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 or head 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, and the authority and the manner of his administration in the last-mentioned capacity are described under Papal State.

Considered as pontiff and prince of the Roman Catholic church, the pope has a very extensive spiritual authority over the adherents of his Church, both in Rome and the provinces, as a matter of canon law, and in the exercise of the papal clemency. 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 work of considerable repute and written with great discrimination, which is entitled Bibliothèque Sacrée, ou Dictionnaire Universel, Historique, Dogmatique, Canonique, Géographique, et Chronologique des Sciences Ecclésiastiques, par les Rédacteurs Pierre Richard et Giraud Dominique; 5 vols. Paris, 1798. "Société d'Eclesiastiques," 20 vols. 8vo., Paris, 1822. 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 primary dignity 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. (Matthews, x. 22.) 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 as to these questions.

2. We may consider 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 that 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 all the faithful in communion under him, as expressed 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 group their assertion on the passage in St. Matthew, xxvii. 40. Peter, Peter, etc. "How," say 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?" (Winer, I. 14.) Or, that even in this their exposition, he is not the pope, because it is not the church, but 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 the passages which are supposed to express the favour of the infallibility of the pope apply not to the individual who is seated on the chair of St. Peter, but to the

* See the preface to Hoope's 'Tasso' for the contempt in which old translations were held.

3 2 F
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 'BibliothecaSacra' winds up these conflicting statements by saying, 'that the question is one of faith.' To this remark however, some 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 assert the infallibility of the pope by divine right, it follows that they consider the belief in that infallibility, and in all the decisions emanating from it, as matters of faith; and as long as this controversy remains unsettled, a door is always open to schism, as it happened in the past, and the alliance of the Roman Catholic church is only nominal and precarious.

3. The same theologians who assert the infallibility of the pope, assert also his superiority above the general councils, and that he has as much right in deposing them, transferring them to a different place, of approving or condemning, 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 superior to the pope in all matters. The assertors of this proposition say that the pope is the head of the faith, 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 the council is a general one. It may be a matter of dispute here, 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 legitimate councils of the church, but is not so reckoned by the canons of Rome. [Pragmatic Sanction.]

4. The writers who maintain that the pope has a divine right, both temporal and spiritual, over the whole world. Others maintain that he has at least an indirect power in temporal matters, inasmuch as he can dispose of kingdoms and crowns, and transfer them as princes to another whenever that is required for the welfare of souls. Lastly, other divines are of opinion, that neither the pope nor the church has any power, direct or indirect, in the temporal matters of kingdoms and states, that they cannot in any case depose kings, nor release their subjects from their oath of allegiance. In support of their argument, these divines show that Jesus Christ made open profession of poverty, that he solemnly declared that his kingdom is not of this world, and college others sages as equally decisive; and they say that the Saviour bequeathed to the church a purely spiritual authority, to be exercised in preaching, baptising, instructing, and loosing or binding; the early fathers have said that the church has only the spiritual sword to keep its children within the path of duty. The most celebrated universities of Germany, France, and Spain have confirmed this opinion, which is that of the Gallican church and of Bossuet himself. The contrary opinion, namely, that the popes have a temporal jurisdiction over kings and principalities, is not of older date than the time of Gregory VII.

Such are the statements of orthodox Roman Catholics in a work which contains the recognition and Jansenians, and the Jansenists assert that the pope has no authority over the bishops, but only a superiority of rank; that all the bishops are vicars of Christ, and that the pope is the first among them, that his jurisdiction is not to be transferred by episcopacy, but only to watch over the conduct of the other bishops, &c. These opinions of the Jansenias are found, among other works, in the 'Acts of the Synod of Pistoia held by De Ricci' (Atti e Decreti del Concilio Diocesano di Pistoia, 1st and 2nd. August, 1786). After the Protestants and Reformers, they do not acknowledge any authority or jurisdiction in the pope, except over his own diocese as bishop of Rome, or at least over the other dioceses of the province of Rome as metropolitan. The Greek, Armenian, Jacobite, and Nestorian churches likewise disclaim his authority. Several Roman Catholic writers have endeavoured to trace the growth of the supremacy of the Roman church over the churches of the West, which supremacy they assert was once limited to the provinces which constituted, under the Christian emperors, successors of Constantine, the vicariate of Rome, namely, Etruria, the March of Ancona, Valeria, Apulia, Calabria, Campania, Papal, and Corsica. These provinces were under the lay jurisdiction of an imperial vicar. The rest of Italy, with Rhezia, constituted the vicariate of Italy, of which Milan was the capital. Both vicariates were subject to the prefect of Italy, who had the authority of the provinces of Etruria and Illyria. The provinces which formed part of the vicariate of Rome were called 'suburbania,' and their bishops acknowledged the bishop of Rome as their metropolitan. Such is the opinion of the Catholic church, and the Pope himself, 'De antiquâ Ecclesiâ Disciplinâ,' and of Giunone, in his 'Storia civile del Regno di Napoli.' They contend that until the reign of Valentinian III. the metropolitan authority of the bishop of Rome over the suburbanian bishops was complete. Allatius, Baronius, Marmont, and others, on the contrary, contend that the bishop of Rome was by right the metropolitans of the whole West, if not of the whole Roman empire. Gregory I. (the Great) however disclaimed the title of 'Occumene or universal bishop,' and in token of humility assumed that of 'Servus Servorum Domini,' the 'Servant of the Servants of the Lord,' which his successors have continued to place at the head of the Catholic church.

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 diocese of Rome he appoints a prelate called Suburbicarii of Ostia and Velletii, of Porto and Santa Rufina, of Sabina, of Frascati, of Albano, and of Palestrina. As primate of the Roman Catholic church, he has under him the following sees. In the Papal State, 8 bishops and 29 bishops; in Tuscany, 3 archbishops and 17 bishops; in the kingdom of the Two Sicilies, 33 archbishops and 73 bishops; in the Sardinian monarchy, 7 archbishops and 34 bishops; in the duchy of Parma, 4 bishops; in the duchy of Guadarrama, 3 bishops; in the Austrian empire, 13 archbishops and 71 bishops; in the rest of Germany, 5 archbishops and 26 bishops; in Switzerland, 4 bishops; in Belgium, 1 archbishop and 5 bishops; in France, 14 archbishops and 56 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 35 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 German colonies, 4 archbishops and 39 bishops; in Italy, a bishop, 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; in the churches of Africa, several several bishops in partibus infidelium in Turkey, China, 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 Papal States; Belgium, the dominion of Belgium. In America, the Spanish and Portuguese states are also exclusively Catholic. Roman Catholic congregations are scattered about various countries of Asia, but

For the manner in which the pope carries on the spiritual government of his 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 and annals. The Romish Catechism, Condemnation of False and Heretical Opinions, Face, Caixinus, Clement, Eugenius, Felix, Gregory, Honorius, Innocent, John, Julius, Leo, Martin, Nicholas, Paschal, Paul, Pius, Sergius, Sixtus, Stephen, Urban, &c. The reader may refer to the Vita et Res Gestae Pontificum Romanorum ab Initio noscentis Ecclesiae usque ad Urbanum VII., by Cacconio, Carea, and Vittorelli, fol., Rome, 1630.

The chronology of the earlier popes is often obscure, and the dates are uncertain. The following table is chiefly

...
founded on Petru’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 Bituriga, 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. [Clytus I.], 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 Telesphorus, a Greek, who is said to have been succeeded by Soter (Iro, a native of Sicily, who died in the year 139. Hyginus, a native of Athens, succeeded Telesphorus, and was succeeded, in 145, by Pius I., a native of Aquileia. Pius was succeeded in 151, by Anicetus, a native of Syria. Anicetus was succeeded, in 161, by Soterian, who was succeeded, in 176, by Eleutherus, in whose time Lrenus 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. Callixtus was succeeded, in 229, by Urban I. Pontianus succeeded Urban in 236, and died in exile. He was succeeded V., a native of Greece, who died in 253, in which year he had been elected to the see of Rome. The See of Rome was vacated until the year 311, when St. Pius was elected. Pius was succeeded by St. Silvester I., in 314, and died in 335. Silvester was succeeded by St. Celestine I., in 352, and died in 354. Celestine was succeeded by St. Sixtus II., in 356, and died in 358. Sixtus was succeeded by St. Dionysius, A.D. 359. He was succeeded St., a native of Greece, who died in 370. St. Eusebius succeeded St. Felix in 315, and was succeeded, in 328, by St. Cyril, who is said to have been a native of Thessaly. Cyril was succeeded, in 334, by Marcellus. Marcellus died in A.D. 335, and after a vacancy of three years St. Julius was elected in 338. St. Julius succeeded in 342, and died in 344. St. Felix succeeded St. Julius in 349, and died in 352. St. Sixtus III., a Roman, was elected in 352, and died in 355. St. Leo I., a Roman, was elected in 352, and died in 354. St. Callistus was elected in 358, and died in 361. St. Celestine was elected in 368, and died in 370. St. Sixtus II., a Roman, was elected in 388, and died in 390. St. Sixtus III., a Roman, was elected in 390, and died in 395. St. Leo I., a Roman, was elected in 395, and died in 398. St. Callistus was elected in 398, and died in 400. St. Julius became pope in 400, and died in 432. St.Celestine was elected in 432, and died in 438. St. Sixtus III., a Roman, was elected in 438, and died in 440. St. Leo I., a Roman, became pope in 440, and died in 443. St. Callistus was elected in 443, and died in 450. St. Julius became pope in 450, and died in 458. St. Sixtus III., a Roman, was elected in 458, and died in 459. St. Leo I., a Roman, became pope in 459, and died in 461. St. Callistus was elected in 461, and died in 468. St. Julius became pope in 468, and died in 475. St. Sixtus III., a Roman, was elected in 475, and died in 483. St. Leo I., a Roman, became pope in 483, and died in 498. St. Callistus was elected in 498, and died in 519. St. Julius became pope in 519, and died in 523. St. Sixtus III., a Roman, was elected in 523, and died in 527. St. Leo I., a Roman, became pope in 527, and died in 533. St. Callistus was elected in 533, and died in 535. St. Julius became pope in 535, and died in 542. St. Sixtus III., a Roman, was elected in 542, and died in 548. St. Leo I., a Roman, became pope in 548, and died in 552. St. Callistus was elected in 552, and died in 556. St. Julius became pope in 556, and died in 579. St. Sixtus III., a Roman, was elected in 579, and died in 590. St. Leo I., a Roman, became pope in 590, and died in 597. St. Callistus was elected in 597, and died in 609. St. Julius became pope in 609, and died in 610. St. Sixtus III., a Roman, was elected in 610, and died in 611. St. Leo I., a Roman, became pope in 611, and died in 640. St. Callistus was elected in 640, and died in 682. St. Julius became pope in 682, and died in 695.
He was the first who changed his name on his assumption.

963. Leo VIII, 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. Domnus 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.

986. John XVI., a Roman.

996. Gregory V., a German: Crescentius put to death by Ohno 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 XIX., of Rome, brother of the preceding.


1044. Gregory VI., of Rome, deposed.

1047. Clement II., of Saxony (bishop of Bamberg).

1048. Damasus II. (Poppo, bishop of Brixen).

1049. Leo IX., bishop of Toul. Final separation of the Greek church.


1057. Stephen IX., Frederick, abbot of Monte Cassino.

1063. Benedict XI., styled antipope, deposed, abdicated.

1059. Nicholas II., of Urgundy.

1061. Alexander II., of Milan.

1073. Gregory VII., Hildebrand, a monk of Soana in Tuscany.

1086. Vigbert, antipope, assumed the name of Clement III.

1086. Victor III., a native of Beneventum.

1089. Urban II., a native of France.

1093. Paschal II., a native of Tuscany.

1095. Antipopes, Albert and Theodoric.

1118. Gelasius II., a native of Caeita.

1125. Calixtus II., a native of Urgundy.


1129. Innocent II., a Roman.

1133. Anacletus, antipope.

1143. Celestius II., a Tuscan.

1145. Lucius II., of Bologna.

1145. Eugenius III. of Pisa.

1153. Anastasius IV., a Roman.

1154. Adrian IV., Nicholas Breakspear, an Englishman.

1159. Alexander III., Cardinal Orlando Bandinelli of Siena.

1159. Cardinal Octavian, antipope, by the name of Victor.

1161. Cardinal Guado, antipope, by the name of Paschali.

1161. Calixtus, antipope.

1181. Lucius II., Cardinal Ubald of Lucca.


1186. Beneventum, died in two months.


1191. Celestius III., Cardinal Hycacinthus, a Roman.

1192. Innocent III., Cardinal Latarius of Signia.


1227. Gregory IX., Cardinal Hugo of Amagni.

1241. Celestius IV., of Milan, died in a few days.


1254. Alexander IV., Cardinal Raimondo Conti of Anagni.

1256. Urban IV., James, patriarch of Jerusalem, a Frenchman.

1257. Clement IV., Guy of St. Gilles in Languedoc.


1276. Innocent V., Cardinal Peter, a native of Taranto.

1276. Adrian V., Ottobono Fieschi of Genoa, died in a month.

1276. John XXII., of Lieben.


1281. Martin IV., Cardinal Simon de Brie, a Frenchman.


1301. Benedict XI., Cardinal Nicholas of Treviso.

1305. Clement V., Bertrand of Bordeaux, removed the See to Avignon.

1316. John XXII., James of Cahors in France.

Nicholas, antipope, in Italy.

1334. Benedict XII., James Fournier, a Frenchman.

1342. Clement VII., Peter Roger of Limoges in France.

1352. Innocent VI., Stephen Aubert of Limoges.

1362. Urban V., William Grimoard, a Frenchman.

1370. Gregory XI., Peter Roger, a Frenchman, restored the See to Rome.

1375. Urban VI., Bartolomeo Pignano, a Neapolitan.

Antipope, Clement, at Avignon.

Boniface IX., Peter Tomacelli of Naples.

Antipope, Pedro de Luna, a Spaniard. [Benedict, a pope.]

1404. Innocent VII., Cosmo Migliorati of Sulmona.

1406. Gregory XII., Angelo Corrari of Venice, abdicated at Constance.

1409. Alexander V., Peter Philargius of Candia.

1410. John XXIII., Cardinal Caesare, deposed by the Council of Constance.

1417. Martin V., Otho Colonna, a Roman.

1421. Eugenius IV., Gabriel Condulmero, a Venetian Schism between the Popes and the Council of Basle.

Felix, antipope. [Anacreon VIII.]

1447. Nicholas V., Cardinal Thomas of Sarzana.

1455. Cajetanus III., Alfonso Borgia, a Spaniard.

1458. Paul II., James Sylvius Peccolomini of Siena.

1461. Paul II., Peter Barbo of Venice.

1471. Sixtus IV., Francis della Rovere, a Genoese.

1485. Innocent VIII., Gian Battista Cibo, a Genoese.

1492. Alexander VI., Rodrigo Lenzo dei Borgia, a Spaniard.

1502. Pius III., Francis Todescelli Piccolomini, died in a month.


1513. Leo X., Giovanni de' Medici, son of Lorenzo the Magnificent.

1521. Adrian VI., Ulpheo, preceptor of Charles V.

1527. Clement VII., Giulio de' Medici, nephew of Lorenzo.


1536. Julius III., Giovan Maria Gioce of Rome.

1552. Marcellus II., Cardinal Cervini of Montepulciano, died in a month.

1554. Paul IV., Giovanni Caraffa, a Neapolitan.

1562. Pius IV., Giovanni Angelo Medicini of Milan.

Cosed Council of Trent.

1565. Pius V., Michele Ghislieri of Alessandria in Piedmont.

1572. Gregory XIII., Hugo Buoncompagni of Bologna.


1596. Urban VII., Gian Battista Castagna, a Genoese, died in a few weeks.

1605. Gregory XIV., Nicola Sfondri of Milan.

1619. Innocent IX., Gian Antonio Faccinetti of Bologna.

1621. Clement VIII., Ippolito Aldobrandini, a native of Fano.

1625. Alexander VI., Alessandro de Medici of Florence, died in a month.

1625. Paul V., Camillo Borghese of Rome.

1628. Gregory XV., Alessandro Ludovici of Bologna.

1629. Urban VIII., Maffeo Barberini, a Florentine.

1644. Innocent X., Gian Battista Pamfili of Rome.

1655. Alexander VII., Fabio Chigi of Sienna.

1667. Clement IX., Giulio Rospigliosi of Pistoia.

1677. Clement X., Emilio Altieri of Rome.

1685. Clement XI., Benedicto Odescalchi of Como.


1711. Innocent XII., Antonio Pignatelli of Naples.

1706. Clement XI., Gian Francesco Albani of Urbino.

1721. Innocent XIII., Michel Angelo Conti of Rome.

1724. Benedict XIII., Vincenzo Maria Orsini of Rome.

1730. Clement XII., Lorenzo Corsini of Florence.

1746. Benedict XIV., Prospero Lambertini of Bologna.

1769. Clement XII., 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.

1846. Leo XIII., Antimo Raimondo della Chiesa of Rome.

1858. Pius VIII., Cardinal Castiglioni of Cingoli.

1881. Gregory XVI., Mauro Cavallari, born at Belluno.

POPcY is a word often used in England in an invidious sense to denote the Roman Catholic religion in general, but more particularly those tenets of the Roman Church.
which most abusively 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 its abhorrence of individuals; in this one, he sought to do justice to the Catholic Church. For a zealous Catholic there can be no truce with what he considers to be error, and his duty is to reclaim as many as he can to the bosom of his church.

On the 15th August, 1832, and addressed to all patriots, archbishops, and bishops, the principle of allowing liberty of conscience to the people is enounced as absurd, erroneous, and delirious, derived from the corrupt sources of indifferentism. For the liberty of error is the greatest blessing in man. The preamble to this declaration was the following:

"In September dissolved the society which he had established for advancing religious liberty." (Affaires de Rome, parte il, de la laicizzazione, 1836, with a copy of the "Emancipier Letter," and other documents.)

Poperinge is a flourishing town in the province of West Flanders, in the kingdom of Belgium, twenty-six miles south by west of Ghent, 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 buckram, and many of the English and Scotch manufacturers take an especial interest in them, especially in hops, which are very extensively cultivated in the neighbouring 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, are the chief 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 area, and are able to pursue the animals which they pursue 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 London 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 the savage life. The purely pastoral state admits of a greater relative proportion of population; but the necessity of frequent return, and the fact that it is not concentrated in one point or part of the country, will prevent the 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 population is to be supported by the farm, then the demand for that of the husbandman is not so great, and the labour which former wandered 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-agriculturalists is needed to satisfy the demands of the community. When a more minute division of employments takes place; and the husbandman is solely engaged in raising food while others are employed in making clothing and supplying 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, wealthy, and industrious population, who possess a good soil and abundance of mineral iron, who have a large market for their produce 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 produce of its soil and manufactures abroad, it only has to strengthen its industry at the markets of the world, and thus enjoy 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 individuals as a country has reached the highest degree of civilization hitherto known, the population is as great to one single square mile.

Under all the diversity of circumstances in which the inhabitants of different parts of the world exist, their numbers are less, or in opposition to the necessities of subsistence. If the population increases faster than the food for their support, poverty and misery ensue, and death thins their numbers, and brings them to a level with the means of subsistence. This effect may be seen in certain parts of the world, such as India, to a square mile or several hundreds. Hence the proportion of births, marriages, and deaths to the population, is as important an element in ascertaining the physical condition of the people of any country as the proportion of their numbers to each 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 (Pinto and Aristotle) (Pinto, La Mennais; Aristotle, Politik, vii. 16). In later times, this truth had been seen by Dr. Franklin, Sir James Stewart (Treatise on Pol. Econ., book 1), Mr. Townsend (Essay on the Poor-Law), and Mr. Malthus (Essay on the Principle of Population), and a little attention at the time when they wrote. In England especially, during the eighteenth century, a false opinion prevailed that the population was diminishing; and subsequently the doctrine of Malthus, that the population of France rendered the evils of a redundant population almost imaginary in general estimation. The decennial census of the population during the present century, the transition from war to peace, and the commercial embarrassments and periods of public distress 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 first published anonymously in 1798. This work was suggested by a paper in Godwin's "Inquirer," and the author's object was to apply the principle of population in considering the schemes of human perfection, and other speculations on society to which the French revolution had given birth. Humo (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 principle of his Essay. In 1803 appeared a second edition, to which Mr. Malthus affixed his name, and which might almost be considered as a new work. The author had in the interval added a large number of statistical and other proofs in support of the principle of population on the past and present state of society, and the subject was for the first time treated in a comprehensive and systematic manner. A third and fourth edition were published in 1814 and 1815.

The fifth edition, containing several additional chapters, was published in 1817. The sixth and present edition, which contained few alterations, was published in 1826. The title of the work as it at present stands 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 principal propositions of the author; the two propositions are—that population, when unchecked, goes on doubling itself every twenty-five years, or increases in a geometrical ratio; while the means of subsistence, under the most favourable circumstances, could not be made to increase faster than in an arithmetical 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 ratio, 1, 2, 4, 8, 16, 32. Thus if all the fertile land in the world was to be doubled, the population by this process might 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 ever go on with unabated vigour, if food could 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 power 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 more in the manner of a check upon the various forms and causes of misery. 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. The moral restraint, that is, the check which does not direct 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 privileges of education which bad himself would have enjoyed. Such a restraint may be practised for a temporary period or through life, and though it is a deduction from the sum of human happiness, the evil is not to be compared in extent with that which results from positive checks upon population owing to unhealthy occupations, severe labour, and exposure to the extremes, extreme poverty, bad nursing of children, excesses of all kinds, the whole train of common diseases and epidemics, war, plagues, and famines.

The preventive and the positive checks which form the obstacles to the increase of population are resolvable into, 1. moral restraint; 2. vice; and 3. misery. Moral restraint (considered as one of the checks to population for the first time) in the population, 1813) is that potential 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 connexions, are the heeds of Vice. Those potential checks which appear to arise unavoidably from the laws 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. But 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 civilized 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 or expedients which have been proposed or have prevailed in society, as they affect the evils arising from the population: the first three chapters, the systems of equality proposed by Wallace, Codrington, Geddes, &c. are considered. Several chapters are devoted to the consideration of poor-laws; corn-laws (first in importance in countries on which they are under restrictions on importation); the agricultural system; the commercial system; and the combination of both. The last two chapters are, 'Of increasing Wealth as it affects the Condition of the Poor;' and a summary containing 'General Observations.' 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 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 our 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; his habits, manners, and tastes, simple and unassuming; his whole character gentle and mild. The last edition of his 'Principles of Political Economy' contains an interesting memoir of his life and writings by Dr. R. D. Blackmore, M.D., of Chichester, published in the latter part of the year 1815.

It is a matter of regret that they have never been published in a collected form. Several of the most valuable productions of this author, and some of his book Reviews. We must refer the reader to the above 'Memoir' for a further account of Mr. Malthus. He was born at Albury, near Guildford, in 1766; was a fellow of Jesus College, Cambridge, and entered holy orders; he afterwards engaged in business, and lived quietly among the duties of which he fulfilled to the time of his death, in December, 1834. Mr. Malthus was a Fellow of the Royal Society and a member of the National Institute of France. It is not creditable to those who had the distribution of ecclesiastical patronage, that Mr. Malthus never held any preferment in the church. From this brief notice of the individual, and the character of whose name is so important in the theory of population, to the elucidation of which the best part of his life was devoted, we turn to the subject of the present article.

Although circumstances may sometimes occur in which the tendency of population to outstrip the means of subsistence may be counteracted, and food may for a time increase faster than population, yet this only gives an impulse to the latter, and the former proportion is quickly re-established. Population has power to produce the necessary increase of food for the increase of population. The evil is due to the small productive powers of the land. When the impossibility of increasing the productive powers of the land is a check to population we call such circumstances external. It is evident, for example, that the rate of wages depends, for one of its elements, upon the proportion between population and means of employment, or in other words, capital; and that any alteration in either diminishes wages. If population has increased, and the funds for employing labour have remained stationary, the competition of labourers will cause the rate of wages to decline. If, on the other hand, capital has increased faster than population, or the means of employment to any given spot more rapidly than population, wages will rise in the former case, and in the latter will be higher than in other places where the same thing has not taken place. Thus, occasionally in some parts of the United States, so many emigrants with capital will flock to a single spot, that the wages of carpenters, tailors, and others, whose labour is in immediate demand, will become very high compared with any other place that has not been recently settled. The tendency of population to increase is the same under all circumstances, but this is not the case with capital; for in proportion to the capital already accumulated, the difficulty of adding to it becomes greater, that is, the field for the growth of capital becomes smaller. If a share of such circumstances wages would have a constant tendency to fall, if the checks to population did not interpose; but it depends upon the people themselves whether the level is to be maintained by force of vice and misery, or by habits of prudential restraint. The former may always be occurring to them a fair proportion of the necessities of life.

The great problem of society is to maintain the most beneficial proportion between population and food—to unite the two grand desiderata, a great actual population and a state of society in which squall poverty and dependence are comparatively but little known. Disheartening as the evils resulting from the principle of population may at first sight seem, they are capable of mitigation. This principle may even be regarded as one of the great springs of human improvement—as the parent of invention and the stimulus to exertion—which preserves society from that state of stagnation and decline into which it would fall if not urged onward by some extraordinary power. It is the interest of all members of society, and is particularly incumbent on those who have the power, to use their best exertions to elevate the habits, tastes, and moral feelings of the people; and by this means render every successive material improvement conducive to the happiness of society. If this be not done, as much wretchedness as we find in the lower layers of society may co-exist with the highest efforts of art and industry, to raise the people above the wretchedness of industry. Even the introduction of vaccination or any similar means of diminishing mortality is of little avail provided the number of marriages continues the same without any corresponding increase of the resources of society; and the check of mortality will not be felt until the disease will be fatal under other forms. Every improvement
which tends to increase the quantity of human food, and every invention which eases society bycheapening 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 advantages which these improvements are calculated to confer.

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 worthy of notice. Some have had to an index quote 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 the increase of the human labour of the extent of the power of society. Dr. Price, Mr. Godwin, and Mr. Sadler entertained this notion. 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 ably 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 mass of the increases in population "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; and since both have since died, the supposed difference of opinion after forty years' anxious reflection on the subject, he had no chance to make 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," by Archibald Alison, Esq.

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" signify a combination of things 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 that cannot increase. If, therefore, the word "natural" is to have its ordinary acceptance, the increase of population, or the product of new population, may be said to be natural, exactly in the same sense in which the increase of population or of any other products of animals generally may be called natural. If the term "natural" be used in this sense, 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 the proposition; 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 thing produced 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 could be only between any accidents or errors which may have a 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," or that the "means of subsistence" are such as to "render the economic external necessary" (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 this 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 offspring. But this kind of "natural" (as again this very vague expression) is positively checked by want of food and other things necessary for human sustentation and health. If food and such other things could be had without the expenditure of labour, that is to say, if food and such other things only are necessary to its increase, population would go on continually increasing. But the actual conditions of obtaining food and such other things are of a different kind. It is not human labour that supplies, who, if supplied with all that they want without any labour, would go on increasing 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 in a garden for eating. The whole proposition 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 the "habits of society" may increase, and man has in a sense 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 only sufficient for the actual population, there can be no increase of 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 members of that nation may accumulate for sustenation and the habits of society: they may be the bare means of sustaining life; or they may be those things also which Mr. Senior has well defined under the heads of "accidents and the habits of society"; but these accidents and the habits of society remain the same, 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; but 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 must be remembered that the means of subsistence and such increase is the effect of labour only.

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 power of subsistence must be equally vague and obscure. It is a 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 insufficient, no more than sufficient, any increase of the population must be preceded 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 is on an existing scale, 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 causes they are never existent or ever likely to 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 barely sufficient for the existence of the actual population; in others they are more than barely sufficient.

In the former case there can be no increase of population (Vol. XVIII.—3 G)
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 with 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. We must follow to the full amount of those increased means of subsistence; and further, population may and sometimes does 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 may suppose, is the meaning of Mr. Malthus's proposition.

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. Many have supposed that an increase of population would not be possible without an increase of the 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 proportioning to the means of subsistence. But this cannot be true if it shall be admitted 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 the 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 conceivable, 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, by the competition of others 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 true, that in some industries 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 sustenta-

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. Supreme, the increase in the means of subsistence, or the products of human labour, are the antecedent conditions of any actual increase, and the increase of population may be to the amount of such increase, but cannot surpass it. If the increase of population is supposed to be the same as the increase on which by 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 supposed to be made up in the next periods by an increase in the population. There is then, or may be, a constant fluctuation for short periods, the population and the means of subsistence alternatingly 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 comparative rates 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 as a whole will be sufficient for the people 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 in the same way in which the population existing 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 end of such interval in the same way of living. At the end of any long interval, if there is an increase 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 lowered, et al. and a fortiori, must have been such balance, if the mode of living was raised; that is, the means of subsistence at the commencement of such interval, and those produced during it, have been sufficient to bear the population 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 such interval a small surplus for the next, and do much for the production of an increase in the following interval. The actual fact may be that in some intervals population has passed a little beyond what was provided at the beginning, and during such intervals, the consequence of which is a diminution in the rate of increase, the means of subsistence, at the end of such intervals, does not correspond to the actual increase of deaths. 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 speculations as these, unless it becomes an effect. The principle of population is stated by Mr. Malthus with more precision than by some writers who have adopted his opinions. The expression 'means of subsistence' is not always quite free from objection, his real meaning is perfectly so. His correspondence with Mr. Senior shows this. The importance of right notions on this subject must be the object of this further attempt at explaining it.

POPULUS [Rom.] PORCELLAIN. [Pottery.]
PORCELLANA, Adamson's name for the testaceous form known to modern zoologists by the name of Margaritifera. The shell is a general use for a genus of Crustacea. [Porcellan.]
PORCELLANIS, a tribe of Anomurous Crustacea, placed by M. Milne Edwards next to the Pectinurans, and immediately preceding the section of Mucronate Decapods of which that author had previously treated by
their fan-like caudal fin, more or less resembling that of the
taurodromus. He states that he only knows a single genus
homing this conformation, viz. the Porcellana. He has
has divided the division into the following limits, in
which he establishes the passage between the Porcellana and the
Galathea, and which have hitherto been approximated to
the last, as well as Megalops, which form is perhaps
more similar to that of some of the species of this
family, whose development is not complete. To distinguish
between these three genera it is sufficient to recollect that in
the Porcellana and the Eleghe, the fifth pair of feet are
filiform and bent back above the others, whilst in Megalops
they are formed like those of the last, and that the Eleghe
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 says that he has not examined, but which he thinks
ought to be considered as young crustaceans whose true
characters are not known.

Porcellana. Lam.

Generic Character.—General form resembling that of the
Brachyura. Carapace ordinarily as wide as it is long, sub
orbicular and depressed above. Front advanced above the
insertion of the internal antennae, and even capable of
covering them completely when they are bent back, without
there being, nevertheless, anninary fossae. Eyes small
and lodged in a sort of orbit, the upper wall of which is well
formed, but the limits of which are not determined exter
nally and internally except by the antennae, and whose su
terior border is very short and scarcely projecting: this
last border is prolonged externally, and there is between
the kind of crest thus formed and the border of the carapa
se a deep furrow, from which the external antennae
spring; these appendages are inserted consequently out
side the eyes; their basilar portion is composed of three
cylindrical joints, the second of which is the greatest, and
their terminal stem is very long. The buccal frame is
quadriform, well developed, from small to resemble an internal
feet, which, in bending back, are applied against the lower
border of the front. These last appendages are very large;
their second joint presents on the internal side a large la
mellar dilatation with rounded borders, and its anterior and
external angle is prolonged so as to form a more or less
stout tooth; the third joint is much smaller and nearly
triangular: the joints which follow diminish successively,
and are furnished internally with very long hairs; there
is a similar basilar joint to the terminal stem. The
mouth is formed by a small multi-articulate filament, but there is no
Bragum.
The sternal plastron is very wide and nearly circular. The
anterior feet are very-large and more or less flattened; the
arm is very short and never reaches much beyond the cara
pase; but the carpus is very long, and presents in general a
laminar prolongation, which advances above the superior
border of the hand when it is bent back. The pincers are
strong, and little or not at all dentated. The three suc
ceeding pairs of feet are nearly cylindrical, and terminated by
a conical tarsus; the last pair are very slender, bent
back above the base of the others, and terminated by a small
diadactylous pincer. The abdomen is wide but lamellar,
and bent below against the sternum; it is composed of seven
distinct rings in a large fan-shaped fin consisting of five
blades, and formed by the last segment and by the appendages
of the preceding ring: the basilar piece of these ap
pendages is very short, and carries two great oval blades
nearly of the same size, tilted on their edges, and divided
backward. The median piece of this fur does not reach be
yond the lateral appendages, and presents furrows which
seem to indicate that it is formed by the soldering of the
seventh abdominal ring with a pair of lamellar appendages
belonging to this same segment. The underside of the ab
domen is more or less membranous, and presents in the
male a single pair of appendages fixed to the second ring,
and each composed of a small cylindrical stem terminated
by an oval lamella. In the female are found two or three
pairs of appendages which are rectangular in shape, and
terminate by two or three tubules which precede the penultimate ring, and each composed of a
multi-articulate stem. Lastly, the branchiae are fourteen
on each side, and are disposed in bundles of two above the
exterior antennae, and a pair under the anterior, and of the three
successing pairs of feet; there is however but one
above the posterior foot. (M.E.)

M. Milne Edwards divides this genus into the following
sections:—

§ 1. Species whose front is entire and does not possess
lateral teeth.

a. Front triangular.

Example, Porcellana violacea. Length about an inch.

Locality.—The coasts of Chile.

b. Front straight or slightly rounded.

Example, Porcellana semiplana. Colour reddish with green
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 Porcellana viridiss, Gray, Zool. Misc.;

Psitada 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 platecyeles. Length about seven lines.

Colour brownish.

Locality.—Coasts of England and France.

P. b. Hands long, narrow, and thick; pincers slender.

Example, Porcellana longicornis (Psitada longicornis,
Leach: Cancer longicornis, Penn. Brit. Zool.). Length
about three lines.

Locality.—Coasts of England and France.

M. Milne Edwards thinks that the division of this genus
into two, under the name of Psitada, as well as Porcellana,
by Dr. Leach, has been effected without sufficient reason. M.
Desmarest, though he adopts it, shows that the former
name is established upon insufficient characters; therefore
M. Milne Edwards thinks that it ought to be abandoned.

Aglaea. Leach.

Generic Character.—Carapace depressed and much
longer than it is wide, divided into two portions by a furrow
which separates the stomachal from the cardial and branchi
al regions: these last are dilated, and terminated exter
nally by a trenched border. The front is armed with a
rostrum, at the base of which is seen on each side a notch
which represents the orbit. Ocular peduncles very
short and directed forwards. Internal antennae inserted below
the ocular peduncles, and their very short stem bent back
between those organs and the base of the rostrum; their
basilar joint globular. External antennae inserted on the
same line as the internal ones, in the lateral angle of the
carapace; their peduncle composed of four joints, the three
first of which are extremely small, and the fourth cylindri
cal and more elongated. Buccal frame wider forwards than
backwards, and not separated from the epistome. External
jaw-feet pediform; their second and third joints scarcely
larger than the three last, and exceed by the palp. Ster
nal plastron triangular and very wide at its base, which
is situated between the fourth pair of feet. Last segment of the
thorax very moveable and fairly developed. Anterior
feet of moderate length, but stout and convex, directed
forwards and not outwards as in the Porcellana, and bent
back below; the claw is strong and slightly hooked out
into a spade-shaped terminus. The three succeeding pairs
of feet are slender and moderate; their tarsus stylif
form and rather elongated. Posterior feet slender, cylindri
cal, nearly filiform, terminated by a rudimentary claw,
and bent back below; the tarsus is fixed to the base of the others, or a notch in
the branchial cavity. Abdomen shorter than the carapace, and
habitually recurved below against the thorax, so that it is

3 G 2
impossible to straighten it completely; it is very wide, and furnished above with seven crastaceous segments, but completely membranous below. The fin which terminates it is very wide, but its median piece (formed by the seventh abdominal ring) is small, and does not form a fan with the lateral pieces, which are distant from it and supported on a 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 ovigerous 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 Porcellanae more nearly than the Galathea, to which they had been hitherto placed; but the conformation of the abdomen of the Aglessium seems to him to indicate that their natural position is in the section of Anomura. [Galatheideae].

Example. Aglessium Aglessii. Length about two inches. Locality:—Coast of Chile.

Megalops, Leach.

M. Milne Edwards observes that the small crustaceans designated by this generic name has much analogy with the Galatheideae and Porcellanidae; and if they be really animals arrived at their entire development, they would certainly establish the passage between the Anomura and Macrurous 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 he 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 established 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 Philadelphia'; to Desmarest's work (Conseil sur les Crustacé); and to the 'Histoire Naturelle des Crustacé' of M. Milne Edwards. The species recorded are both American. [Porcellio. [Isopoda, vol. xiii., p. 55.]

PORCH (from the Latin porticus), a general term for any provision 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 front. Therefore, the term porch is usually employed only in speaking of Lombardic Norman Gothic, and similar styles, it would be more correct and apply to it, without regard to style, to what bears the character of a porch. By attending to such distinction, misconception would sometimes be prevented: if the Athenæum 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 Cyrihestes, which has a small prostyle portal on two of its faces, north and northeast and each consisting of a simple stylobate, or two columns and their entablature, surmounted by a pediment; and which therefore may be regarded as the prototype of those ornamental compositions for doors and windows, so greatly affected in Italian architecture, which present a microstyle application of the ornamental is, small columns adapted not to the entire structure, but to subordinate parts of it.

When porticoes were laid aside, as partaking too much of the character of Pagan temples and columns began to be not only attached to the building, but employed as microstyle decorations to its different external stages or stories, often very irregularly, and generally connected together by arches; in short, when the Roman style was transformed into and superseded by the Byzantine—or what Mr. Wightwick terms the Constantinian—and the Lombardic styles, porches began to be important features, subordinate indeed in size to the structures to which they were attached, but principal in regard to embellishment, being frequently composed of groups of small columns, elaborately wrought, and some of them often placed on the backs of lions or other animals, and supporting a series of composite arches or archivolts mouldings equally enriched. Here microstyle embellishments have so far come 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 the archivolting constituted the general splay of the whole portal, which was thus extended in appearance ad libitum, without regard to the size of the actual doorway or aperture itself, a very important advantage as regards design. In the Norman-Gothic style, the porches or portals are little changed, the modification of the same features in Byzantine and Lombardic architecture. Of porches we shall, strictly so called, that is, portals projecting out from the edifice, 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 continental examples, we do not find advanced porches brought out beyond the general plan of the building in front; the porch being there almost invariably enclosed under 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, but on a different plane, as for instance in the front of Westminster Hall, Winchester Cathedral, &c., although in those cases the entrances are placed rather within deep recesses than porches. In church architecture, entrances of the last-mentioned kind hardly ever occur at the west front as were frequently made very conspicuous features in the side elevations, of which we have some striking instances in the beautiful north porches at Salisbury and Wells cathedrals, both of which advance out very considerably.

In our antient 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 as to have a true arch which forms a bay in a room, over it; and it is not unfrequently carried over the door so as 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 profusely ornamented, even where the rest is plain. Kirby, in Northamptonshire, the seat of Lord-Chancellor Hatton, offers a most elaborate, not to say extravagant, example of this class. In modern imitations of our older domestic architecture, it is now with some propriety, when the entrance porch in such manner that carriages can drive into it, by making an arch of sufficient width on each of its fronts or sides. But as it is generally managed, the effect is seldom generally pleasing and tolerable. From that which forms the state entrance in the quadrangle at Windley Castle is by no means unexceptionable.

PORCHESTER CASTLE, [Hampshire]
PORCUPINES, *Hystrix*, a family of rodent quadrupods.

The genus *Hystrix* of Linnaeus 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 *Myocastor* (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 Carnivorous. Their molars are foreshortened, and are from four in number, with a flattened crown, variously modified by layers of enamel, which leave deep intervals; their tongue is rough with spiny scales; their claws are too small to be applied to the sternum and omoplate, and are only suspended by ligaments. Many of them live on berries, and have much the habits of Rabbits. Their grunting voice, joined to their large and truncated muzzle, has, he says in conclusion, caused them to be compared to the Hog, whereas their French name *Por-Epic*, and, he might have added, their English appellation.


Mr. J. E. Gray makes the *Hystrixidae* the second family of the order Gireus, with the following character:

Cutting teeth two in each jaw, lower truncated; grinders 4—4 in each jaw, rooted, compound; tongue and body covered with spines; clawlike none.

† Tail short.


† 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 in the young and, externally, by a folding inwards of the outer coat. He well describes their other leading features and peculiarities. "Their tongues," says he, "are roughened by papillae, like those of cats; their heads generally short and truncate; their nostrils large and open; their ears and eyes covered with black; their tail small; and their general form short, thick, and clumsy."

With regard to the arrangement of this natural family, proposed by Mr. F. Cuvier, the same author observes that the French zoologist has attempted to subdivide it into smaller generic groups, dependent chiefly on his own theoretical notions of the value of the slightest modifications in the form of the skull and teeth in the discrimination of genera. Some validations 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 Mr. F. Cuvier's views, unless when 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, and with a view of reconciling the two, has ventured to add, as a second species, the *Landshad* of Mr. Gray's "History of Sumatra." He makes a suggestion that the genus *Hystrix* is one of the most typical in the order Rodentia, and he observes that Mr. F. Cuvier appears moreover to have dismissed 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 subgeneric Erythizon, in which, Mr. Cuvier observes, the proportions of the European species are, as it were, completely reversed; the hair of the body, which in *Hystrix* 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 scarcely seen. The tail also is nearly half as long as the body.

The third subgeneric, he remarks, has the tail, which is short in *Hystrix*, and moderate in *Erythizon*, of consider-ably great length, and it is plentifully distinguished by being prehensile. "A more important circumstance," continues Mr. Swainson, "for considering this animal as the type of a sub-generic 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 prehensilite 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 investigator, *H. fistulosus* of Cuvier, founded this genus upon the most solid principles. The Indian porcupines constitute the subgeneric Acanthion, and they differ very remarkably from all the preceding; the spines are no longer round, but assume the flattened appearance of strips of parchment; and M. Cuvier remarks that in one of them the *fasciulata* of Linnaeus, 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 parchment." There must be something very different in the habits of these In- dian 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, considered those in question as belonging to the genus *Mus*, or in other words, a species of spined rat. Thus much for the distinctions of the subgeneric Acanthion, of which three species have already been discovered."

The last subgeneric group noticed by Mr. Swainson is *Spigurus*, and, in further proof that M. F. Cuvier has unconsciously marked out the circular arrangement, and defined the natural subgenera of the genus *Hystrix*, Mr. Swainson remarks that the two most typical, *Hystrix* and *Erythizon*, agree in their teeth, while the three aberrant types, namely, *Erythizon*, * Synatheres*, and *Spigurus*, possess certain modifications, constant among themselves, but sufficiently distinct from the former.

We proceed to lay some of these forms before our readers.

*Hystrix*, Linna.

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 fossa very small; parietal bones depressed, by the temporal on the side projecting very much, tail short, not prehensile, feet plantigrade, the anterior tarsal row, the posterior pentadactyls, armed with large nails.

M. F. Cuvier gives to the Porcupines (*Hystrix*) and the *Acanthion* the following—

Dental Formula:—Incisors 2; molars 4—4, $\frac{4}{4} = 20$. 
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 near the Cape, where it is called Beervark, is the root of that beautiful plant the Calla Athropica, which grows even in the ditches about the gardens; but he adds that it will frequently desin to put up with cabbages and other vegetables, and sometimes commits great depredations in those 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 Pliny with his usual love for the marvellous. Hist. Nat. viii. 35.) Kulan, Opian, 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 ejaculation to a distance does not exist. There are usually several openings to the norm open's burrow, and these are kept open by the porcupine during the winter, but only for a short time. Mr. Bennett quotes Thunberg, not without observation on his credulity, for the use which he was told the Ceylonese Porcupine makes of the tail-quills. Thunberg was informed that it had a very curious method of fetching water for its young: viz. the quills in the tail are said to be hollow, and to have a hole at the extremity; and that the animal can bend them in such a manner as that they can be filled with water, which afterwards is discharged 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 crowns a piece. It has also been 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 empiews. In September 1834, 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 sucking confirmed the correctness of Blumenbach's statement that the nipple is nearly axillary. Geographical Distribution.—Hystrix, says Pliny (loc. cit.) general India et Africa. Agricola, in his book De Animalibus, (p. 195) states, Verranensis, remanet in Indiae et Africae, 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 all parts of Africa. He adds that it is abundant in the mountains, 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 Agricola). 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 jucunda, Sual of the Mahraws, as Hystrix cauda alba. It 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 spine and open tubes of the tail are entirely white, while in the case of Hystrix cristata the spines are yellow. Hoods are much less rounded, and the nails are shorter, more deeply 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 western regions. (Zool. Proc. 1834.)

Atherura, Cuv. (Acantilus 9 F. Cuv.)

Neither the head nor the muzzle convex; tail long but not prehensile; feet like those of Hystrix.
Example; Athervva crispata, Hystrix fusculata, Shaw; Le Porcypic à ene en pinces. Buff.

Cuvier describes this species as having the spines of the body hollowed into a furrow forwards, and having the tail terminated by a conical point. He supposed that this species had been lost to science until within two years from the time he wrote (1830), when it was rediscovered in Simferopol. He therefore brought it to England, and pronounced it a new genus by Cuvier was a skeleton and skin transmitted from India by M. Dard in the year 1825. It is a living animal, and has been 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. It has been dissected, and the common Porcupine, from which it differs widely in form and size of the head, neck, and limbs, instead of being elevated into a curve of large extent, passing through the head, neck, and limbs, and being more like a straight direction from the occiput to the extremity of the nose. In these respects, Mr. Bennett remarks upon the animal, it agrees with M. F. Cuvier's genus Acrodon, 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 Brown Cuvier has omitted all mention of that established by his brother, although the materials for comparison were fully at his disposal.

Mr. Bennett further observes that Linnaeus founded his Hystrix Macroura on Seba's figure; but Buffon having quoted neither Seba nor Linnaeus, Dr. Shaw took it for granted that this was a new animal, and gave it a new name—Hystrix fusculata. Mr. Bennett entertained, however, but little doubt, notwithstanding these trifling discrepancies in the figures, that Sir Stamford Raffles was right in his conjecture that they both represented one and the same species.

The following is Mr. Bennett's accurate description:

'The differences between this species and the common Porcupine are obvious at the first glance. Its general color is nearly the same, but with less intermixtures 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, fore part of the neck, and the back, are of a greyish white, with the exception of a darker band which crosses the breast in front of the fore legs. 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. They are more whitish at the base and black towards the extremity, but with many of them on the back and sides, the color is a yellowish white, and where the spines are most numerous, is scarcely furnished with a single hair. A few slenderer spines running along the back are occasionally intermixed with the others. The greater part of the tail is bare both of hairs and spines, and covered only by a blackish skin 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 whitish color, 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 fretful with those of the common species, like which, it raises its spines when irritated or disturbed, and carries its body with its feet upon the floor, straight up, its spines being in close contact, and swells and looks big in its defensive armor.'

Geographical Distribution.—The neighborhood 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.

Description.—Ears short, hid in the fur; head, body, legs, and upper part of the tail covered with soft, 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, straggling hairs, three inches longer than the rest, tipped with dirty white; under side of the tail, white short, five toes on the fore foot, five below, each armed with long claws, bowed on their under side; the form of the head is exactly that of a beaver, but is not half the size, one which Mr. Banks brought from New Holland was about the size of a hare, but more compactly made; the tail about six inches long.

Pennant.

These animals vary in intensity of color. Pennant alludes to one entirely white in the possession of Sir Ashton Lever.

This is the Cavia Hudonius of Klein; Hystrix Hudonius of Brissou; Hystrix phalosa Catesby; Hystrix doryata of Linnæus; L'Ursen of Buffon; Canada Porcupine of Forster, Pennant, and others; Cynoecus of the Cree Indians; and Ondostic of the Esquimaux.

Habits: Food: Geographical Distribution.—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. It is 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 Ouseb Lake in the state of New York. (Contents.) 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 burrows in the banks 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 labra, 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 ejects 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 burrow themselves inwards 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 life in this retreat. 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.)

Synomeres. (F. Cuv.)

Muzzle large and short; head convex in front; spine short; tail very long, naked at the end, and prehensile, like that of an opossum (Sarigou) or of a Sappojou; feet with only four toes, armed with claws.

Example, Synomeres prehensilis; Hystrix prehensilis. Linnaeus.

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; adheres closely to the skin, which is quite naked between them; are shorter and weaker as they approach the belly of 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 tapering 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 Marcgrave and Piso; Orco Cachero and Espino of the Portuguese; Aculisagenus 7 of Hernandez; the Brazilian Porcupine of authors.

Habits, Food, Geographical Distribution, &c.—The Brazilian Porcupine appears very much to resemble the Opossum. Its habits, living in woods, sleeping by day, and feeding on fruits, as by night. Marcgrave states that its voice is like that of a sob. 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-tasted. Our cut is taken from a living specimen in the garden of the Zoological Society, Regent's Park.

The genus Sphiggurus appears to be founded on the Coati of Azara. Fossil Hystrixideum.

Cuvier (Oeconom. fossiles, vol. v., part 2, p. 518) states that Mr. Pentland found in the Val d'Arno, near Siena, it had spined, in the same sandy beds which contain so many bones of large quadrupeds, a molar tooth exactly resembling that of a great porcupine, but which appeared to be a species of Ichneumon. (Pordeno'ne. Giovanni Antonio Lichio'ni, or Licino, called H. Pordenone, was born at Pordenone in Friuli, in the year 1484. From the vigour of conception, the elevation of mind, and the style of execution which distinguish his works, it has been presumed, though it is not certain, that he frequented the school of Giorgione. Though on the whole inferior to Titian, he was his rival, and not always without success. He was an able colourist in oil, but chiefly excelled in fresco. As he principally painted frescoes in North or Upper Italy, he was known in Lower Italy only by his fine oil paintings. His most splendid work in oil is the altarpiece of Santa Maria dell'Orto, at Venice, representing a S. Lorenzo Giustimmiani, surrounded by other saints, among whom are seen John the Baptist and St. Augustin. The frescoes of Pordenone are spread over the towns and castles of Friuli; some are at Genoa, Mantua, and Venice, but the best preserved are at Piacenza and Cremona. He was highly esteemed by the emperor Charles V., who ennobled him. Hercules II., duke of Mantua, called him to Mantua to paint cartoons for tapestry to be made in Flanders, but he soon afterwards died (1540), as it was suspected, of poison. It must be observed that he adopted the name of Regidor.

There are some of Pordenone's pictures in England:—at Hampton Court, a large rich picture of himself and family and two other pictures; three in the collection of the late Alnwick baronet; three in the Stafford collection, the woman taken in adultery, figures the size of life; at Chatsworth House a large picture of the Virgin and Child and St. Peter, ascribed to Titian, but which Dr. Wagon thinks to be by Pordenone; at Alton House (the Earl of Shrewsbury) a large picture of the Death of Peter Martyr; at Bunleigh House (the Marquis of Exeter's), 1, the Finding of Moses; 2, the Adoration of the Magi; the figures in both are whole length, the size of life. Dr. Wagner bestows high commendation on them, except as socribed to Bassano, and observes that he knew no gallery that can boast of so much work of this master, whose pictures are so rare.

PORE [Skin].

PORISM (πορισμός). An intermediate class of propositions, between problems and theorems, was, as we are informed by Pappus, distinguished by the ancient geometers under the name of porisms. Unfortunately however the
only notices of them by the antients themselves, which are found in their remaining works, occur in the ‘Collectiones Mathematicae’ of Pappus Alexandrinus, and the commentators of Proclus on the Elements of Euclid, in both places so very imperfectly, that till of late years mathematicians were not aware of a porism, before the definition of porisms by Pappus, which he gives in the preface to the seventh book of his above-mentioned work, in an account of Euclid’s work on the subject, is, in all the manuscripts which have come down to our time, mutilated and every attempt to restore them, before the masterly hand of Robert Simson took up the subject, had completely failed. The first part of the description, which seems to be extracted from the same authority, says: ‘being too general for conveying any precise notion of the proposition, or for giving any effectual assistance for the recovery of them; and the remainder, containing a detail of the contents of Euclid’s work, is through the whole so corrupt that all endeavours to explain it were nugatory. Several celebrated geometers indeed flattened themselves that they had obtained possession of the secret; but even Dr. Halley, with all his acuteness, relinquished the task, and adds, after giving the original, ‘bac海运 porismatum descriptione num multi intellecta neco lectori profutura.’ The definition which Pappus quotes from the antients is too general to be useful, and perhaps implies more than our acquaintance with the language and mathematics of that volume of the ground in Euclid. He says that ‘a theorem is something requiring demonstration, a problem in which something is proposed to be constructed; but a porism, that which requires investigation;’ and though this definition certainly does correspond to the nature of the subject problem and the antient definition of itself neither conveys any precise notion of Euclid’s porisms, nor gives assistance in the investigation of any individual proposition. Dr. Simson’s restored definition is as follows, literally translated: ‘A porism is a proposition in which it is proposed to demonstrate that one or more things are given, to which, as also to each of innumerable other things not given, but assumed according to a given law, a certain relation described in the proposition is to be shown to take place.’ Dr. Simson illustrates the proposition by a corollary to a proposition in Euclid, and so framed as to correspond with all the intimations of Pappus respecting porisms, and also with the character of the few individual porisms of Euclid which Dr. Simson had discovered. Wellington. Dr. Simson and Charles on the first line of his preface to the Elements say, ‘The porism is from the press of the notions on this subject entertained by the antients, although probably, in the cases of theorems and problem, no precise definition was given of porism. It has been objected to Simson’s definition, as if it may be inferred from it that a porism partakes more of the nature of a problem than a theorem, and consequently is inconsistent with the ‘intermediate nature’ mentioned by Pappus. In his enumeration it is affirmed that certain things may be found which shall have the relations or properties therein described. Now were it simply proposed to investigate certain things which would have the properties expressed in the porism, it may be regarded as a problem; but if a certain problem or corollary is in the enunciation, the proposition becomes a theorem affirming the truth of the properties asserted; and then a demonstration is only required, without any investigation in the manner of a problem. But the porism had been practised by the later mathematicians alluded to by Pappus. The enunciation of a porism as a problem is not consistent with the usual character of such propositions. Problems usually, whatever difficulty may attend their solution, are considered as requiring on the principle of some knowledge of geometry, as either possible in certain circumstances of the data, or as altogether impossible; and it would be unusual to propose a problem ‘to find things with certain properties, respecting which no judgments have been formed without an analysis, or such consideration as is equivalent to an analysis.’ For example, if it had been proposed as a problem in the time of Apollonius, to find in a given parabola a point having a given property of the focus, that point being then unknown, such a proposition would not have been considered as a proper problem, but would in reality have been a porism. To take another example: Proclus, in his wretched commentaries on the Elements, mentions the first proposition of the third book, ‘to find the centre of a circle,’ not as being a problem, but 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 the centre of a circle is incapable of being reduced from another of its properties, as, for instance, 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 the square of the line formed by the two rectangles by the segments into which it divides the given line; then the finding of the centre would be a proper porism, and might be enunciated thus: ‘within a given circle (defined in Simson, p. 50, 51.) is a point on the circumference which 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 his ‘Transactions of the Royal Society of Edinburgh,’ which was read before that body, in July, 1784. 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 problem or corollary an impossible proposition. This, it must be confessed, is an important and elegant simplification, and fully conveys every idea contained in the more prior 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, it is not nearly so much to be the utility as to the purity of 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.’ Traill’s Life of Simson, p. 50, 51. As a proposition on geometers, containing some examples in the higher geometry, by the present Lord Brougham, was inserted in the ‘Philosophical Transactions of the Royal Society,’ in 1795. Fryer has given a popular history of the discovery of porisms, in the last edition of his ‘Geometrical Lectures,’ in 1797. He also mentions the complete exposition of them which has yet appeared may be found in the Aperçu Historique sur l’Origine et le Développement des Méthodes en Géométrie, 4to. Brux., 1837, by M. a. de Lagrange. The subject is, however, one of the most distinguished geometries in Europe. Porism was also used by the Greek geometers to denote a corollary to a proposition, and this word is used 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. Hertweck, fol. Bas., 1533, fol. 18. We refer the reader also to Henry Savile’s Preface to the Works of Euclid, 4to. Oxon., 1621, p. 18; and Arna’s Life of Simson, p. 92.

PORITES. [MADREPORA.] PORODRAGUS. De Montfort’s name for a genus of Bematies, arranged by M. de Blainville in the section characterised by a swollen apex, and being straightened near the base.

PORPHYRIDE. PORPHYRIDE. PORPHYRIDE was born in 333, either at Tyre, whence he is called Tyrius, or at Batamea (Bassan), a town of Syria, whence he is called Bataneotes. His original name was Melech, the Hebrew and Syriac for king, a circumstance which may account for the name of Basilius. His preceptor Longinus changed his Syriac name into Porphyrios (a man ‘in purple,’ the adorning 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 Lérins. Whether Porphyry became the pupil of Origen, or how long he continued with him, is uncertain. He afterwards went to Athens, where for some time he studied under Longinus, the celebrated philosopher and critic. When he had spent the first thirty years 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 Libya, in Sicily, and dwelt there till after the death of Plotinus, c. 350, when he is sometimes called Sicius. Here, according to Eusebius and Jerome, he composed his fifteen books against the Christians; which books, with more zeal than wisdom, were afterwards to be published, and burnt by the emperor Theodosius the Elder. Porphyry died at Rome, towards the end of Diocletian's reign, about A.D. 304.

Porphyry has been usually 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 on the part of his writings. Christians of modern times would have been able to turn the arguments of Porphyry to good account in further establishing the truth of their religion. Fabricius has given a list of fifteen books, and, according to different authors, from three classes, published, unpublished, and lost. The last class consists of forty-three distinct performances. A neat edition of his "Life of Pythagoras" and three other works were published in 1604, under the title of "De Historia diadematis et in leonis vita," and were translated into the Latin language in 1612. The "De historicis," and the "De gentibus," and the "De philosophis," were published by Sezessions in 1544, 1547, and 1550, respectively.

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,' 'On the Celestial Spheres,' 'On the Antiquity 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 larger and more accurate edition of the 'Organon.' He wrote also a 'Commentary on the Categories of Aristotle' in question and answer, which was edited by Bog durability, 1543, 4to. The Commentary of Porphyry on the 'Harmonies' of Plutus 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 enuncias among the lost, was discovered by Mai, in the Ambrosian Library at Milan, and published by him in 1816. 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 her death, he addressed to her a work on the soul.

The fragment, which is in verse, belongs to a work in ten books, known by the name of 'De Philosophia ex Oracula Libri.'

(Budin, Lesion; Holstenius, De Vitæ et Script.; Fabricius, Bibl. Graeca; British Critic, vol. v., 1829.)

PORPHYRY. A large number of rocks of igneous origin, both very ancient and comparatively modern, are thus designated; yet this use of the term is neither accurate nor convenient. Properly speaking, a particular structure is indicated by it, and not a definite rock or family of rocks. A felspar of a granular texture, without crystals imbedded, is called an unseldidated felspar. When crystals are imbedded in this felspar; hornblende mixed with uncrystallised felspar makes some greenstones; with imbedded crystals of felspar this becomes greenstone-porphyr; hence, by this mode of designation, we have plagioclase-porphyr, greenstone-porphyr, basic-porphyr, felspar-porphyr, and even so vague a term as spar-porphyr; and, on the other hand, more correctly, porphiropite, poikilopite, porphiropychite, porphyrasite, porphiropytite, porphyrasite, porphiropitite, porphyritic granite.

Among volcanic rocks porphyritic trachytes are common. Fine examples of porphyry (crystals of felspar in a base of uncrystallised felspar) occur in Scotland at Inverarn and in the Trough of Bowland on the Yorkshire Fylde, and in Cornwall, commonly under the title of Euriite.

PORRIGO, Ringworm, is a pestilential 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. scutulata. Dr. Wilian described many more varieties, but he included in this name other widely different diseases. Porriga favosa consists of an eruption of small flat yellow pustules, with depressions at their centres, distinct or clustered, as described by M. Betti, and which are coarser and of a yellowish colour than the superficial surface of which the depressions of the centres of each pustule are usually still visible. After some time the scales become thick and white; and drying, split and break off. However they remain long adherent, the skin beneath them ulcerating, and the discharge oozing through them. The hair of the parts affected is always much loosened, and often falls off spontaneously; and, when it grows again, is weaker and lighter in colour than before.

Porriga favosa appears rarely in any part except the scalp. It affects persons of all ages; but especially children from six to twelve years old, and those who are naturally unhealthy, or ill-fed and dirty. It is distinctly communicable by contagion, and by this means may affect the like 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 poultices or soap and water, and to have the hair cut very close. The deal hair and scabs must then be cleansed off as fast as they form. The second measure is to rub the whole scalp with a solution of some of the following:—ten grains of potassa fuss in a ounce of water, to be applied occasionally; or one or two droshis of subcarbonate of potash in a pint of water, for one or two months, or on linen; or from one to three droshis of sulphur of potash to a pint of water; or from ten to twenty drops of any of the mineral salts to a pint of water, also to be constantly applied. Lotions also of sulphate of copper, nitrate 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 more efficacious than the others, is decided till the head is cleared, 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.

Porriga scutulata, which is more commonly termed ringworm 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 often eaten away by the itching. The dermatitis contained in the pustules dries up soon after they are formed, and, by coalescing, they produce a scar over the whole diseased surface. Subsequently successive crops of new pustules form and dry, and the surface of the head remains thick and hard as a result of drying, and thus the disease may spread over the greater part of the scalp by the spreading of the coalescing of the pustules, which were at first isolated. The hair usually falls from the part affected, or is so loosened that it may be pulled out without pain.

This form of porriga sometimes appears spontaneously in poor and dirty children, but it is usually produced by contagion. The suggestions for its treatment must be the same as for Porriga favosa.

PORSENA, or ORSENNA, a Lar (or mighty lord) of the Etruscan town of Clusium, with whom we are made acquainted in the early history of Rome. When the Tarquins, about two hundred years before the birth of Christ, had defeated the Sabines near the forest of Arpinus, they sought, as we are told, the assistance of Lar Porserena. (Liv. ii. 9.) According to Livy, the Etruscan prince immediately marched with his army against Rome, which was thrown into the greatest consternation. The Tarquins then retired entirely out of sight of the narrative of the events which ensued. Porserena appeared with his overwhelming forces before the Janiculum, and the Romans, who had fortified themselves upon that eminence, retreated back to the Tiber. The bridge (Pons 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 last efforts of his enemies at the mouth of the river. The bridge was broken down, Horatius, after having prayed to father Tiberinus, threw himself into the water, and swam across amidst the darts of the enemy. Porserena, having thus 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 subdued. How this was accomplished, and Rome 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, and made his way to Veii. Here he disguised and armed with a dagger, he found his way into the tent of M. Porcius, 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 offered himself as a hostage, or, as he says, as a present at the king's pleasure. 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 noble 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 Mucius offered peace to the Romans on condition that they should give back to the Veientes those women and their property which had been seized during the delivery of hostages. Porcius returned to Clusium, leaving to the garrisoned Romans his well-stocked camp.

The inconsistencies and incongruities of this story have been pointed out by Beaufort and Niebuhr. We have here to consider whether such gr untering sequel to the events that give the real course of events so much disfigured in the narrative of Livy. Tacitus (Hist. iii. 72) says that the city was taken by Porcius, a fact which at once throws light upon the whole transaction. (Verr. iv. 18.) On arrival Porcius (Dionys. Hal. iii. 39) sent the senate 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 Latium. In the Roman tradition the truth is entirely distorted, and the whole affair between the Romans and Porcius is represented as a series of generous and magnanimous actions on both sides.

After Porcius had left Rome with his hostages, consisting of noble youths, Chloris, one 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, no less generous than the Romans, not only sent Chloris back to Clusium, but sent young men from Veii to secure from the young males all those whom she might wish to restore to freedom. The accounts in Dionysius (v. 33), Plutarch (Publ., 19), and Piny (Mast. Nat. xxxiv. 13), are somewhat inconsistent with one another. After his return to Clusium, continued the legend, Porcius sent his son Aruns with an army against Aesis, then 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 being in possession of Rome, he wished to make himself master of all Latium. The Arantes were at first disarmed, but they asked and obtained aid from other Latin towns, and from Cumis in Campania, and thus gaining fresh strength, made another attempt. The first attempt of the Etruscans was so violent that the Arantes themselves were put to flight; the Cumans however attacked the enemy from behind, and defeated them. Aruns fell, and with him the greater part of his army. Those who escaped sought a refuge at Rome, where they were kindly received, and a district (Vicus Tuscanus) was assigned to those who wished to settle there. It was not until this event that Porcius, according to the legend, returned to Rome, and restored to the Turquins the Janiculum.

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 hold it, however continued her fierce attempts to subjugate Tarquin, 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 Porcius 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 property of the king which was found in the city was publicly sold. This sale gave rise to the symbolic custom of selling the goods of King Porcius, which continued down to the time of Livy (t. 14).

Porcius was, like the kings 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 by which the foundation of the city was purchased for their expansion. How little Porcius belongs to real history 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. 53.)

POSRON, RICHARD, was born at East Ruston, Norfolk, on the 23rd of December, 1759. His father, Mr. Huggin Porson, who 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 arithmetical use in the household, and thus laid the foundation of that extraordinary memory 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. H. D. Munner, an eminent master. Mr. Porson, whose scathe was all in one and the same, could not have been admired in some measure for his beautiful handwriting. He stayed three years at this school, when his abilities and diligence attracted the observation of Mr. Hewit, the year of the parish; from there he was sent to Gloucester, where he 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 neighbourhood. Porson inclined to the study of Greek, and Norris of Groversen Place, was induced to send for Richard Porson, and after examining him in the closest 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 reigned 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 countryman, who had always been a 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, in 1777. Around the year 1782, Sir George Baker founded a college at Cambridge, and 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 who were not so high in the school as he could be, but he was not elected to King's College, Cambridge. However, 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* King's College, Cambridge, consists of a professor and seventy fellows and scholars. The college, founded in 1441, was occasioned by an endowment to a school for the education of poor children, and the last of the Etruscans, which was very popular, is said to have been the presentation to a king's living. But as the number of sermons must always be kept in some sort as large as possible, the sermons sent to Cambri. ge must have been for several years a scholar, after which he is admitted to his degree at A. I. E. At all events, in the July or beginning of August, the provost of King's, accompanied by two Posers, goes to Eton. The scholar collectors are then examined, and a certain number of them, about twelve, are placed on the indenture. These boys go off to King's in succession, that is, in the order in which they stand on the indenture, wherever, in the last year and a half, that is, the three years of the designation, occurs of King's. If the number of boys on the indenture exceeds the number of scholars, the elder must be sent for to Cambri. ge, or some other college, or some other place, where he may be sent for a term of three or four years. The Eviction from August to November, those who remain are examined, unless they are not attaining the college, in which case they are allowed a second chance. This was the case with Porson; he was examined, where he sat in the year 1772 or 1773. Dr. Goddall says, as high in the school as he well could, but he did not rise in the college, which was not considered in the examination of the Posers. The examination of the Posers merely went to ascertain that the senior boys had a sufficient knowledge to qualify them to be admitted to King's, but in the case of a vacancy in King's they were to be admitted by the President of King's, with the exception of the Porson's qualifications being proved (and the standard was a very low one), they were admitted as the college would have done in the event that they stood on the Eton list. Indeed it seldom happened that a boy on the foundation lost his place in his progress through the school. As well placed, 3 H 2
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 under-graduate; and on taking his degree in the following year, he was third grandson in the line of his family to obtain a B.A. degree. Some encyclopaedia of which he 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 1771, and was thereupon recalled to the University of Cambridge; the small salary attached to this office, and an anuity of 100l. for life, which Mr. Cracherode and 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 1773 Porson married Mrs. Lunan, a sister of Mr. Perry, editor of the 'Morning Chronicle.' Unfortunately this lady died about two years later, and the heavy loss occasioned Porson's mind seems to have produced those habits of intemperance 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 was often found at his house on evenings 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 librarian at that establishment, with a salary of 200l. 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 any public situation equal 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 which has been engraved.

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 for a scholar of the first rank, and he was endowed with a stupendous memory, unwearying 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 data 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 was not less charged with a vast store of learning before his time. He was one of the greatest 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 classical writers. D'Aubigné was of this opinion, and the same is likely to be true of any classicist who had not read any of the works of this able 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 belong to him, and we are not aware of any discoveries which in our time any other critic has made; and the absence of the work is to be deplored which he may have made at a later period.

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 for a scholar of the first rank, and he was endowed with a stupendous memory, unwearying 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 data 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 was not less charged with a vast store of learning before his time. He was one of the greatest 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 classical writers. D'Aubigné was of this opinion, and the same is likely to be true of any classicist who had not read any of the works of this able 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 belong to him, and we are not aware of any discoveries which in our time any other critic has made; and the absence of the work is to be deplored which he may have made at a later period.

The important period of the history of Port Royal begins with the appointment of Angelica Arnaud, sister of the famous controversialist Antoine Arnaud. Angelica was a child when she was chosen for the office, and she was educated to be a coadjutrix of the abbess Jeanne de Boulebard, about the year 1600. In 1602 Boulebard died, and Angelica, then not quite fourteen years old, was consecrated abbess. She was appointed to the office of the convent at Port Royal, from which she was removed by the younger nuns. As she grew to womanhood, she conceived the plan of a reform in the discipline of the convent, which had grown rather loose, and she carried it into execution. The rejection of all the rules of this reform were a community of goods, absolute silence, and an attitude from the solemn exercises, and the infliction of penitential mortification. In 1626 Angelica removed with her nuns to a house in the Faubourg St. Jacques at Paris, on account of an epidemic, and the building of which was attributed to the dampness and unhealthiness of that district. In 1633 a new and more spacious house was purchased for the monastic establishment at Paris, in the Rue des Bouchers, at the expense of M. de Nantes, 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 pious and learned men who wished to live a secluded life according to the spirit of the papal bull of 1724, and who were styled 'les Solitaires de Port Royal.' This was the origin of the famous school of Port Royal.

One of the first of these recluses was Claude Lancelot, the grammarian. He was joined by Antoine le Maistre, apostolic delegate to the French Indies, and by the nuns of Claudef, of Andilly, of Saint Sacyj, by Antoine Arnauld, brother of the abbess Angélique, by Pierre Nicole, Nicolas Fontaine, Thomas du Fossé, and others. [Arnauld, Antoine.] They were most of them from the monasteries of Hauranne, abbey of St. Cyran, well known for his controversy with the Jesuits, and his connection with Jansenius, who had been his school-fellow at Louvain. Le Maistre de Sacy was for a time spiritual director of the nuns of Port Royal de Paris. Lancelot and his friends established a school at Port Royal des Champs for the better religious, moral, and scholastic instruction of a limited number of pupils. They objected above all to the lax morality of the Jesuits, and to their method of education, which admitted no improvement. The school of Port Royal consisted of five classes of five pupils each. Lancelot, Arnauld, De Sacy, Nicole, Fontaine, and others were the teachers, and they published in concert a number of works which were destined to gain for them a reputation. The school of Port Royal flourished from 1646 to 1660. It formed many distinguished pupils; Racine and Tillemont were of the number. Among the school-books that were published for the use of that institute the following deserve especial notice: 'Nouvelle Méthode pour apprendre la Langue Latine,' 2, 'Nouvelle Méthode pour apprendre la Langue Grecque,' 3, 'Jardin des Raisins Grecques,' 4, 'Grammaire Générale,' 5, 'Éléments de Langue,' 6. They were written conjointly by Lancelot, Arnauld, and Sacy.

In the meantime the number of nuns and novices of Port Royal de Paris having greatly increased, the abbess Angélique de la Grange, in 1660, invited the nuns of Port Royal des Champs to come to Paris and to join them in Port Royal des Champs. Upon this the school of Port Royal was removed from the latter place to Paris, Rue St. Dominique, Faubourg St. Jacques, but after three years the nuns returned to the nuns of Port Royal des Champs, where they no longer occupied the monastic building, but a farmhouse, called Les Granges, on the neighbouring hill. In 1653, Pope Innocent I. having condemned five propositions in a book of the nuns [Jansenists], Arnauld wrote to prove that these propositions, which were not condemned, were not given to the book of Jansenius, at least not in the sense attributed to them. Upon this Arnauld was accused of Jansenism, and strange to say, the nuns of Port Royal, with their abbess Angélique, took the side of the nuns of Port Royal des Champs. They did not see the five heretical propositions in the work of Jansenius. At last an order came from the king, in 1660, to suppress the school and drive away the boarders from Port Royal des Champs. The nuns continued refusatory. Berxif, archbishop of Paris, sent a party of police-officers, in 1664, who arrested the abbess, the prioress, and other nuns, and distributed them among several monasteries, where they were kept in a state of confinement. Meantime some of the nuns who had remained at Port Royal de Paris intrigued with the government in order to become independent of Port Royal des Champs, and Louis XIV. appointed a separate abbess to Port Royal de Paris. In 1669 a compromise was made, the nuns of Port Royal de Paris remaining the abbess of Port Royal des Champs, with their own abbess were then restored to their convent, but Port Royal de Paris was not restored to them: a division of property was effected between the two communities, by order of the king, which was confirmed by a bull of Clement X. dated 1671. Each convent retained its own abbess. Several disputes took place between the two convents, and the archbishop of Paris and the Jesuits took an active part.

At last, in March, 1708, a bull of Pope Clement XI. suppressed the convent of Port Royal des Champs and gave the property of this convent to the province of the Jesuits, and the property of the convent of Port Royal des Champs to the Pope, to the Community of St. Joseph, on the prohibition of Clement X. of 1705, portant suppression du titre de l'Abbaye de Port Royal des Champs et union des biens qui en depend au Monastère de Port Royal de Paris). In 1708 D'Argenson, the lieutenant-de-police of Paris, was sent with a body of men to Port Royal des Champs, and he removed from thence the nuns, who were distributed among several convents. The convent and church of Port Royal des Champs were striped of all their valuables, which were transferred to Port Royal de Paris, and the former building was leveled with the ground, by order of Louis XIV., as a nest of Jansenists and heretics. Gregoire has written a work styled 'LettresAnsweres aux Réponses sur les Ruines des Monastères de Port Royal de Paris,' for the present appearance of the place. Besoin, Racine, Clémencet, Du Fossé, and others have written Histories of Port Royal. Dr. Reuchlin has lately published an elaborate 'Mémoire de St. Cyran,' by Arnauld, gives a biographical notice of the latter, and a list of his works. 2. Louis Isaac le Maistre de Sacy was also a disciple of De la Grange, and took part in the controversy to withdraw 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 1666 they were both arrested, and confined in the house of Louis Maistre, which Le Maistre had left 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 his friends Nicolas Fontaine and Thomas du Fossé. In 1670 he was permitted to leave Paris, and travel to France, 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 his house of Port Royal des Champs, where he died in 1685. His brother Antoine le Maistre 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 England, but after the revolution he was permitted to return to Paris, where he published his 'Essays of Morals,' which established his reputation as a writer and as a moralist. He also published—1, 'Epigraphummatum Defectus ex omnibus tum veteribus tum recentioribus Poetis,' Paris, 1669; 2, 'Fait que le Christ n'est que le premier 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 Instrucrions Theologiques,' 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 those 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 1666, the first shilling on the gallon being levied upon French wines. In 1697 the duty on French wines was again increased, and they were charged at the rate of 4s. 6d. per gallon, while the duty on Portuguese wine was only 15d. In 1703 a treaty between England and Portugal was negotiated by Lord 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 that was levied upon the same goods in 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 Portugal have ever since been the most popular in England. From 1707 to 1779 the proportion of French 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 commerce, in order to attract the customers to their wines, charging an extravagantly high 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 1782 Portugal agreed to admit other articles coming from England besides her munificent duty 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 shows 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>Year</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>27,785</td>
<td>27,476</td>
</tr>
<tr>
<td>1825</td>
<td>40,304</td>
<td>40,277</td>
</tr>
<tr>
<td>1826</td>
<td>18,604</td>
<td>18,310</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 bond before they attain the qualities which render port-wine a favourite beverage with 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 tariffs, and the imports from England are now placed upon the same 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 tended to create. The consumption of French wines 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), may have a beneficial influence 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, 1829, 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>1820-1-2-3-4</td>
<td>2,822,061,</td>
<td>205,749,748</td>
</tr>
<tr>
<td>1825-6-7-8-9</td>
<td>3,558,292</td>
<td>240,933</td>
</tr>
<tr>
<td>1830-1-2-3-4</td>
<td>2,784,549</td>
<td>215,165</td>
</tr>
<tr>
<td>1835-6-7-8-9</td>
<td>3,491,684</td>
<td>329,017</td>
</tr>
</tbody>
</table>

2. Duties: Years in which alterations were made in the duties on Portuguese, Spanish, and French wines, and rate of the same per gallon:

<table>
<thead>
<tr>
<th>Years</th>
<th>Duties on Portuguese and Spanish</th>
<th>Duties on French</th>
</tr>
</thead>
<tbody>
<tr>
<td>1820</td>
<td>9 1/4</td>
<td>13 9</td>
</tr>
<tr>
<td>1822</td>
<td>4 9/2</td>
<td>7 24</td>
</tr>
<tr>
<td>1826</td>
<td>4 10/12</td>
<td>8 10</td>
</tr>
<tr>
<td>1831</td>
<td>5 6</td>
<td>5 6</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>Portuguese</th>
<th>Spanish</th>
<th>French</th>
</tr>
</thead>
<tbody>
<tr>
<td>1820-1824</td>
<td>50 9/4</td>
<td>21 8/12</td>
<td>3 6/2</td>
</tr>
<tr>
<td>1832-1839</td>
<td>18 13/16</td>
<td>24 1/2</td>
<td>8 7/8</td>
</tr>
<tr>
<td>1839-1841</td>
<td>51 2/3</td>
<td>7 1/2</td>
<td>11 5/12</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 arisen from the increased consumption of malt liquor [MALT], but it has not great increase in the use of British spirits. [SPIRIT-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>Total Gallons</th>
<th>Proportion per Cent.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1820</td>
<td>2,361,461</td>
<td>51 1/2</td>
<td>4,635,550</td>
<td>44 5/12</td>
</tr>
<tr>
<td>1821</td>
<td>2,343,509</td>
<td>56</td>
<td>2,707,734</td>
<td>43 6/12</td>
</tr>
<tr>
<td>1822</td>
<td>2,375,210</td>
<td>51 3/4</td>
<td>2,617,405</td>
<td>46 7/12</td>
</tr>
<tr>
<td>1823</td>
<td>2,492,212</td>
<td>51 2/3</td>
<td>2,596,530</td>
<td>41 8/12</td>
</tr>
<tr>
<td>1824</td>
<td>2,512,343</td>
<td>49 2/3</td>
<td>2,780,303</td>
<td>42 2/3</td>
</tr>
<tr>
<td>1825</td>
<td>2,470,719</td>
<td>52 4/12</td>
<td>2,790,024</td>
<td>43 4/12</td>
</tr>
<tr>
<td>1826</td>
<td>2,833,688</td>
<td>46 7/8</td>
<td>2,878,359</td>
<td>42 3/4</td>
</tr>
<tr>
<td>1827</td>
<td>2,322,192</td>
<td>47 1/2</td>
<td>2,560,232</td>
<td>40</td>
</tr>
<tr>
<td>1828</td>
<td>2,307,021</td>
<td>46 1/2</td>
<td>2,906,457</td>
<td>41 4/12</td>
</tr>
<tr>
<td>1829</td>
<td>2,692,084</td>
<td>43 1/2</td>
<td>2,908,192</td>
<td>41 4/12</td>
</tr>
</tbody>
</table>

Average 2,833,043 | 49 2/3 Average 2,768,892 | 43 3/4

5. Quantities of Portuguese wines warehouse bound in the United Kingdom on the 5th of January in each of the following years. It may be observed that the increased quantity bound may be solely occasioned by additional facilities for bonding:

<table>
<thead>
<tr>
<th>Years</th>
<th>Gallons</th>
<th>Gallons</th>
</tr>
</thead>
<tbody>
<tr>
<td>1820</td>
<td>1,396,588</td>
<td>1,312,272</td>
</tr>
<tr>
<td>1823</td>
<td>1,498,735</td>
<td>1,381,768</td>
</tr>
<tr>
<td>1826</td>
<td>904,335</td>
<td>1,187,835</td>
</tr>
<tr>
<td>1829</td>
<td>2,397,185</td>
<td>1,815,718</td>
</tr>
<tr>
<td>1833</td>
<td>2,062,735</td>
<td>2,061,165</td>
</tr>
<tr>
<td>1836</td>
<td>2,858,554</td>
<td>1,956,553</td>
</tr>
<tr>
<td>1839</td>
<td>2,765,956</td>
<td>1,957,353</td>
</tr>
</tbody>
</table>

PORTA, GIAMBATTISTA, was born of an ancient and noble family at Naples, about the year 1550. He applied himself very early to the study of nature, and was deeply read in Aristotle, Plato, and all the ancients who in any treatise on nature or description. He is said that at the age of fifteen he composed the first books of his 'Natural Magic'; but as he derived his opinions from such authors as Arnold de Villanova and Cardano, he mixed up numerous fantastic and delusory notions with the deductions of modern real science, and was himself a great source of theme to those writings that he travelled through Italy, France, and Spain, visiting all the libraries and learned men, and conversing with artists on matters relating to their several professions. His first publications was an attempt at the production of his first magical system of human the art of painting. A suspicion of his being addicted to unlawful superstitions, censured 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 prohition 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 "Secreti," and was attended by men 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 for particular sciences, but to the utmost of his power promoted public academies, and had no small share in establishing that of 'Gli Oziosi' at Naples. In his old age he composed dramas, both tragic and comic, which have not been successful and are quite forgotten. He died, unmarried, at Naples, February 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, concave, and convex 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 accounts been the inventor, if not the author. 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 third rendering of this book was translated into several modern languages; into English, for instance, so late as 1658. This work contains a great number of curious facts that were not generally known at that time concerning the properties of plants, metals, animals, &c.; and also the most remarkable human inventions. It is a vast compilation of passages extracted from authors both antient and modern, and put together without taste or judgment; but it contains a great many of interesting observations, and contains many telescopes, fire-works, statics, mechanics, &c. 3. 'De Furvius Litterarium Notis, vulgo de Zifariz,' Naples, 1553, 4to., several times reprinted, with the addition of a fifth book. This is the fourth in order of the fourteen editions of different kinds of secret writing, of which one hundred and eighty are explained, and a method proposed by which they can be multiplied ad infinitum. 4. Physiognomoniae Occulta Libri Quatuor, by Marcus Minutius, Notice Historique sur I. B. Porta, Paris, 1801, 8vo. (Biog. Univ., and Biog. Med.)

PORTAL VEIN. [LIVER.] PORTALINGTON. [QUEEN'S COUNTY.]

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 and beer. After being malted, the seed or malt was dried and roasted at a very early period, called it 'porte-coulant,' &c. eluding gate, which is the true etymology of the word. 'Coullbes is likewise used by the French writers for the portuells, which term is immediately derived from.

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 and beer. After being malted, the seed or malt was dried and roasted at a very early period, called it 'porte-coulant,' &c. eluding gate, which is the true etymology of the word. 'Coullbes is likewise used by the French writers for the portuells, which term is immediately derived from.

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 and beer. After being malted, the seed or malt was dried and roasted at a very early period, called it "porte-coulant," &c. eluding gate, which is the true etymology of the word. "Coullbes is likewise used by the French writers for the portuells, which term is immediately derived from.

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 and beer. After being malted, the seed or malt was dried and roasted at a very early period, called it "porte-coulant," &c. eluding gate, which is the true etymology of the word. "Coullbes is likewise used by the French writers for the portuells, which term is immediately derived from.

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 and beer. After being malted, the seed or malt was dried and roasted at a very early period, called it "porte-coulant," &c. eluding gate, which is the true etymology of the word. "Coullbes is likewise used by the French writers for the portuells, which term is immediately derived from.

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 and beer. After being malted, the seed or malt was dried and roasted at a very early period, called it "porte-coulant," &c. eluding gate, which is the true etymology of the word. "Coullbes is likewise used by the French writers for the portuells, which term is immediately derived from.

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 and beer. After being malted, the seed or malt was dried and roasted at a very early period, called it "porte-coulant," &c. eluding gate, which is the true etymology of the word. "Coullbes is likewise used by the French writers for the portuells, which term is immediately derived from.

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 and beer. After being malted, the seed or malt was dried and roasted at a very early period, called it "porte-coulant," &c. eluding gate, which is the true etymology of the word. "Coullbes is likewise used by the French writers for the portuells, which term is immediately derived from.

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 and beer. After being malted, the seed or malt was dried and roasted at a very early period, called it "porte-coulant," &c. eluding gate, which is the true etymology of the word. "Coullbes is likewise used by the French writers for the portuells, which term is immediately derived from.

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 and beer. After being malted, the seed or malt was dried and roasted at a very early period, called it "porte-coulant," &c. eluding gate, which is the true etymology of the word. "Coullbes is likewise used by the French writers for the portuells, which term is immediately derived from.

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 and beer. After being malted, the seed or malt was dried and roasted at a very early period, called it "porte-coulant," &c. eluding gate, which is the true etymology of the word. "Coullbes is likewise used by the French writers for the portuells, which term is immediately derived from.
extent of its consumption must be taken with caution. The brewing of porter has not been very successfully practiced in the country's 'collections' in England; and the peculiar excellence of 'London porter' from the large scale on which all the processes connected with the brewing, particularly the vatting, are conducted, as well as the skill of the brewers. In Barclay's brewery there are 700,000 gallons each year, containing 30,000 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 of one-ninth and one-twelfth; and in London's 'collection,' where 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, in which city it is held renders it not only in demand in every part of England, but also for export abroad. Allowing one-sixth for exportation, and for the provincials, 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 (1838), 'that Irish porter is now largely exported to England, and the Dublin bottled porter successfully rivals the London porter, even in London itself.'

**PORTEUS, BELBY**, an eminent English prelate, was born, 1721. He passed several years at a small school in his native city, and when he was thirteen 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 educated, and afterwards entered upon the University. His personal worth, united with his superior attainments, both classical and mathematical, soon procured him a fellowship in his college, and by the active exertions of his mind he was made eligible for the presidency 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 Peterborough, and afterwards dean and archbishop of Elphin, and rector of Lambeth. 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, Oxford.

In 1773, Dr. Porteus, with a few other clergymen, applied 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 temperate 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 death of bishop Brussel, he was promoted to the diocese 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 Friday on 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 public preacher, he was considered a man of learning and ability; and he pursued through life a steady course of pious exertion for the benefit of his fellow-creatures, which procured him a high reputation among men of all descriptions. Consisting of 'Life of an Archibishop Secker,' and the poem 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 Biography, Diction.)

**PORTIUS, [Naples Province.]**

PORTICO. Originally applied without distinction to colonnades and covered ambulatories, the term is now limited to signify a sheltered space enclosed by columns at intervals and connected by an entablature, roofed with a pediment, like the end or front of a Greek temple. The term therefore, as now generally restricted, answers to the Pronaos of such a temple. Porticos are described according to the order and number of columns, viz. tetrastyle, hexastyle, octastyle, &c. [Civil Architecture; Pantheon.] They are called prostyle when, as generally happens, they project from the main building. Such a portico as is attached to the front of the building, are technically called loggias; the latter term indeed is not 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 façade, whereas colonnades are usually lengthened ranges of columns in other situations; thus we break of the colonnade of the Church of Our Saviour, Green-Wich Hospital, and of the piazza of St. Peter's at Rome.

**Pseudo-prostyle** is a useful term suggested by Mr. Hosking for such an arrangement of columns beneath a pediment as is seen in a prostyle in elevation, but which, instead of advancing forwards, may be slightly projecting back, the portico itself being within the building, and nowise differing from a recessed loggia, except that it is not in antis, and is crowned by a pediment. Of this kind is the Ionic order, as at the India House, which, instead of being a tetrastyle in antis, is converted into a hexastyle by placing six columns in such manner that the ends come immediately before the ante or pilasters. The front of the new Institution, Chancellors, may also be called a pseudo-prostyle, because, although a loggia in antis, it is surrounded by a pediment.

Even in prostyle porticoes there is great difference of character, both as regards the degree to which they approach the style of them, independently of other circumstances; some are made to advance a single intercolumnium, and others project considerably more. At the risk therefore of appearing to inno-

In the terminology of architecture, we would pro-

pose the following terms:—monostyle, porticoes projects only one intercolumnium, as the Ionic hexastyle of St. Paneras church, London; diprostyle, where the projection is two intercolumnium, as in the portico of St. Martin's, Charing-

cross, and of Bishopsgate, where in the method the portico of the Pantheon at Rome might be briefly yet distinctly described as a Corinthian octastyle tri-

prostyle, that is, a prostyle with eight columns or seven intercolumnium, immediately before its ends. Another circumstance, which it is highly im-

portant to note, is whether a portico be a simple prostyle, or be likewise polyastyle, that is, whether the columns be merely external, or whether there are additional columns within the portico, as is the case with that of the Pantheon, which may therefore be further described as polyastylar. The portico of the Kazan church, St. Petersburg, and of those of the Glyptotheek at Munich, and Canova's church at Pos-

zano, are also polyastyle. This is likewise the case with the Corinthian octastyle of the Exchage at Glasgow; but scarcely an instance of the kind occurs in London, for the two columns within the portico of the National Gallery hardly entitle it to be called, and the architectural feature of the Bank which we shall presently notice can hardly be classed as a portico.

Some porticoes again may be termed compound prostyles, because, while the main body of the building, they also recede within it, as is the case with those of the London Post-Office, University College, and Hanover Chapel, Regent Street; and such an arrangement gives greater effect as well as spatio-musical value to the portico from looking like a mere addition to the front of a building. Besides the varieties above enumerated, there are those which are semi-


circular in plan, of which the transect entrances of St. John's furnish very admirable examples; and another occurs in the porticoes or portico-like colonnades at the north-west angle of the Bank of England, which, owing to its being likewise recessed, and having columns behind
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 edge is, it is for the purpose of draining water that the portico so shaped cannot be made equal to a hexastyle, or a tetrastyle in antis, that is, have five intercolumns, because if there be only three, either the whole portico must be very narrow in proportion to its height, or the intercolumnia so wide that over them the eye naturally overhang a line drawn from one column to another, and thereby produce an appearance both of deformity and weakness.

Whatever be the form adopted for a portico, however elevated it be in the eye, if the columns are not in line with it, and the whole scheme of the building is not so centralised if the background or rear wall be filled with doors and windows. Such is the case with the otherwise noble and classical portico of St. George’s, Bloomsbury, which has five intercolumnia in antis, and the three others in a curve. St. George’s 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 five columns, and in the centre 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 in the portico of the transept of St. Paul’s, the Post-Office, St. Pancras church, University College, the National Gallery, and the Doric hexastyle in antis of the Corn Exchange arise from the circumstance of their having no windows, and from their doors being made rich and important features. In the three doorways within St. Pancras portico are of most exquisite design, but would have shown themselves to more advantage had they been placed farther back, for the portico being merely a monoprostyle, and not at all recessed, its shallowness causes the doors to be too close to the columns, and thereby prevents their being seen at advantage.

As to windows, unless they can be treated as doorways, and treated hereafter as doorways, there are such blemishes within any sort of colonnade or portico, that if they cannot be got rid of, both good taste and economy would be better consulted by giving up the portico altogether. A colonnade in a single width may be rendered both appropriate and ornamental features. So far however is this from being duly attended to, that frequently no study is bestowed upon such apertures when placed within a portico: a very glaring case of the kind occurs in what we should else pass by as beneath notice, namely, the very paltry Corinthian hexastyle, as it must be termed, forming the front of the Haymarket Theatre, which presents another most offensive solecism in the prostermost width of the lateral intercolumnia. So far and so far only does that portico, though of the same order and denomination, resemble the highly beautiful one which grace Carlton House, and which, but for the defect alluded to, was one of the finest in London, and possessed of the most important proportions. It was a Corinthian hexastyle, dixiprostyle, but of triprostyle proportions, for in order to admit a carriage-drive into the portico (certainly a very great convenience in itself) one intercolumn in each flank was made equal to two of the others and a column, thereby producing a most offensive gap, and causing it to look as if a column had actually been removed in order to allow a carriage to pass. In all similar cases, where much greater width than that afforded by the other forms is required for the same purpose, the less plan would be to substitute an open arch at each end of the portico, by which means, while an equal or even greater breadth of opening might be obtained, it would not show itself so obvious a defect.

Sutherland’s town residence, offers, among its other defects of design, a striking instance of very faulty and irregular culmination in the upper portico of the north front over the entrance, where at least six columns might be added to each flank, for the sake of the entablature of those ends has no support except its own extremities, and consequently offends by the appearance of both poverty and height.

Having mentioned porticoes which are raised upon a base, we may further remark that their effect greatly depends upon the manner in which the base itself is treated. This last-mentioned part should invariably be made to represent in some way the interior design of the windows, and if with only a single doorway the better, as is the case in the east front of St. George’s Hospital, Grosvenor Place, where beneath the tetrastyle portico (which is perpendicular, and should therefore be square) and beneath its having square pillars instead of columns) there is only a door with a small niche on one side of it. On the contrary, a low basement with small windows beneath a portico has always a mean and crowded appearance, as may be seen in that of the Mansion-House. A similar objection applies to the portico added to the front of the Custom-House after the falling in of the Long-room, and which is certainly no improvement upon the original design. The effect of the Doric colonnade to the College chapel is much enhanced by its being placed on a solid stylobate more extended than the portico itself, whereby the latter seems to stand firmly on a terrace-like substruction. Besides the grandeur it confers upon the portico the breadth and repose of this lower part give additional effect to the columns, its horizontality contrasting forcibly with their upright lines, and its unbroken surface with the peristyle beneath it. As it is, the columns, their only objection criticism can here allege is that the mouldings are rather tame and scanty, and that some further embellishment would not have been amiss. It may be prejudged that the columned colonnade with its compendium of statue-like columns on the pier where the extent on the one hand of the surfaces; and if such pieces of sculpture should ever be added, they would greatly improve this portion of the façade.

Windows, as already observed, ought to be excluded altogether from 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-culmination, or rather sub-culmination, might be adopted. To form a part of the upper story of the insulated pillars below into columns of short and massive proportions, so as to produce a diastyle in antis, or three open intercolumns beneath the centre ones of a hexastyle, &c.

As high as the greater length of this treatise will allow, we shall refer to a question which who would prescribe coupled columns altogether, we certainly cannot hope to come against them for any kind of pedimented prostyle; such disposition has however most unfortunately been adopted in the principal portico of Buckingham Palace, owing to which what might have been an ocasisia is reduced, as regards the number of intercolumns, to a tetrastyle. The intercolumniation also is exceedingly irregular, the intercolumn on each flank being nearly double as wide as those in front, and, as defect probably occasioned by the necessity of obtaining unusual width there in order to admit the royal state-carriage into the lower portico; for the principal portico, it should be observed, is raised upon another formed by a series of small Doric Dorcia, the possession of which was above recommended in such case, but continued throughout; whereas had there only been solid piers beneath the angles of the upper portico, the whole would have been in some degree improved, although there would still have remained a defect of diminutive columns and disproportionately wide intercolumns.

Respecting the mere temple-porticoes of the antients, or rather the external arrangement of columns in such edifices, whose confusion to the end of our treatise 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. In the following chapter we shall enter into the subject of the porticoes and colonnades in the first volume of the "Library of the Fine Arts," 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 cir-
cumstances. 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 com-
ence with that of the Pantheon at Rome (Fig. 1), attached
to a circular edifice [PANTHEON], 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 gen-
erality of modern porticos.

Besides being triprostyle, or having three open inter-
columns 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 con-
siderably 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
Canaletto 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
octastyle.

Although there are very few decaestyle porticos, it is not
merely as an example of one that we hare exhibit that of Uni-
versity College (Fig. 3), since it might hare been such without
being at all worthy of notice for its plan, as is the case with
the decaestyle one of the Chamber of Deputies at Paris
[PARIS], which is no more than a monoprostyle, or single
line of twelve columns, beneath a pediment. That of Uni-
versity College, on the contrary, projects forward very con-
siderably, it being equal to a triprostyle, or a pseudo-tripro-
style, 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, &c., 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 monoprostyle, recessed, and polystyle, it
being compounded of an octastyle advanced only one inter-
column before the rest of the front, and of a tetrastyle 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-triprostyle, consequently projects
as much as three intercolumns from the building; but, in
other respects, differs very materially from it, being only

Fig. 3.

partially recessed in the centre, where are two columns
forming a distyle in antis, the only instance among all our
London porticoes of one with any columns within it. It
also differs from the other example altogether in the ar-

Fig. 4.
range 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 propped at each end and 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 tripystyle with six inner columns, via four disposed as in the portico of the Pantheon (Fig. 1), and two forming a pronaos 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 those 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 columnation in some respects; for though, technically speaking, no more than a monopyrstye octastyle, it 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 antis 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 porches, 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 mean in the extreme, mere 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 dialyse in antis, in the front of the building originally erected in the Dickens 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 ante, 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 northwest 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 of Porticos.

<table>
<thead>
<tr>
<th>Class</th>
<th>Order</th>
<th>Building</th>
<th>Architect</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dodecasty</td>
<td>Corinth</td>
<td>Chamber of Deputies, Paris</td>
<td>Poyet</td>
<td>Monopostyle, sculptured pelmet.</td>
</tr>
<tr>
<td>Decastyle</td>
<td>&quot;</td>
<td>University College, London</td>
<td>Wilkins</td>
<td>Hyper-dipostyle, recessed. Height of columns 36 feet.</td>
</tr>
<tr>
<td>Octastyle</td>
<td>&quot;</td>
<td>Pantheon, Rome</td>
<td>Wilkins</td>
<td>Hyper-tripostyle. Polyostyle and recessed.</td>
</tr>
<tr>
<td></td>
<td>&quot;</td>
<td>National Gallery, London</td>
<td>Basevi</td>
<td>Hyper-dipostyle, with distyle in antis, recess within.</td>
</tr>
<tr>
<td></td>
<td>&quot;</td>
<td>Fitzwilliam Museum, Cambridge</td>
<td>Dyer</td>
<td>Monopostyle, recessed, and with order continued</td>
</tr>
<tr>
<td></td>
<td>&quot;</td>
<td>Victoria Rooms, Bristol</td>
<td>Hamilton</td>
<td>laterally, forming three intercolumns on each side.</td>
</tr>
<tr>
<td></td>
<td>&quot;</td>
<td>Exchange, Glasgow</td>
<td></td>
<td>Unequal dipostyle, recessed, five intercolumns.</td>
</tr>
<tr>
<td></td>
<td>&quot;</td>
<td>Buckingham Palace</td>
<td>Nash</td>
<td>Dipostyle, with two inner columns corresponding</td>
</tr>
<tr>
<td>Octastyle-Pe-</td>
<td>&quot;</td>
<td>Birmingham Town-hall</td>
<td>Hansom &amp;</td>
<td>with second and seventh of the octastyle.</td>
</tr>
<tr>
<td>ripteral</td>
<td>&quot;</td>
<td>La Madeleine, Paris</td>
<td>Welsh</td>
<td>Columns fluted, their height 26 feet.</td>
</tr>
<tr>
<td></td>
<td>&quot;</td>
<td>Girard College, Philadelphia</td>
<td>Hufvè</td>
<td>Columns 36 feet high. Side elevations of twelve int.</td>
</tr>
<tr>
<td></td>
<td>&quot;</td>
<td>The Walhalla, Bavaria</td>
<td>Walter</td>
<td>columns on flanks.</td>
</tr>
<tr>
<td></td>
<td>Doric</td>
<td>Glyptotheca, Munich</td>
<td>Klenze</td>
<td>See Paris.</td>
</tr>
<tr>
<td></td>
<td>Ionic</td>
<td>Great Theatre, Petersburg</td>
<td>Thomond</td>
<td>Columns 55 feet high; marble.</td>
</tr>
<tr>
<td></td>
<td>Doric</td>
<td>Church at Possagno</td>
<td>Canova</td>
<td>Monopostyle, polyostyle, recessed, tetrapostyle in antis.</td>
</tr>
<tr>
<td></td>
<td>Ionic</td>
<td>Manège, Petersburg</td>
<td>Quarenghi</td>
<td>Monopostyle, polyostyle, double dipostyle.</td>
</tr>
<tr>
<td></td>
<td>Hexastyle</td>
<td>St. Martin's, Charing-cross</td>
<td>Gibbs</td>
<td>Monopostyle, polyostyle, recessed.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>St. George's, Bloomsbury</td>
<td>Hawksmore</td>
<td>Dipostyle, height of columns 34 feet.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Law Courts, Dublin</td>
<td>J. James</td>
<td>Dipostyle, five arched doors, and five arched windows above them.</td>
</tr>
<tr>
<td></td>
<td>&quot;</td>
<td>Kazan Church, Petersburg</td>
<td>Cooley and Gandon</td>
<td>Dipostyle, polyostyle, a triple hexastyle.</td>
</tr>
<tr>
<td></td>
<td>&quot;</td>
<td>Pantheon, Paris</td>
<td>Voronikhin</td>
<td>Reliefs within portico, height of columns 62 feet.</td>
</tr>
<tr>
<td></td>
<td>&quot;</td>
<td>Madre di Idoio, Turin</td>
<td>Soufflot</td>
<td>A dipostyle, attached to a rotunda. Two inner columns behind the penultimate ones in front.</td>
</tr>
<tr>
<td></td>
<td>&quot;</td>
<td>St. Nicholas's, Potsdam</td>
<td>W. Ross</td>
<td>Hyper-monopostyle.</td>
</tr>
<tr>
<td></td>
<td>&quot;</td>
<td>Bethlem Hospital, London</td>
<td>Schinkel</td>
<td>Monopostyle; height of columns 36 feet.</td>
</tr>
<tr>
<td></td>
<td>&quot;</td>
<td>Post-Office, London</td>
<td>Lewis</td>
<td>Dipostyle, recessed, columns 37 feet high.</td>
</tr>
<tr>
<td></td>
<td>&quot;</td>
<td>Theatre, Berlin</td>
<td>Schinkel</td>
<td>Monopostyle, flight of steps in front.</td>
</tr>
<tr>
<td></td>
<td>&quot;</td>
<td>East India House, London</td>
<td>Jupp</td>
<td>Pseudo-monopostyle; height of columns 30 feet.</td>
</tr>
<tr>
<td></td>
<td>&quot;</td>
<td>St. Pancras' Church, London</td>
<td>Messrs. Inwood</td>
<td>Monopostyle; florid Ionic; columns 36 feet high.</td>
</tr>
<tr>
<td></td>
<td>&quot;</td>
<td>Royal Institution, Manchester</td>
<td>C. Barry</td>
<td>Monopostyle. Order continued laterally, forming loggias of three intercolumns on each side of prostyle.</td>
</tr>
<tr>
<td></td>
<td>&quot;</td>
<td>Post-Office, Dublin</td>
<td>Johnston</td>
<td>Monopostyle, columns 36 feet high, fluted.</td>
</tr>
<tr>
<td></td>
<td>&quot;</td>
<td>Radhuis, Copenhagen</td>
<td>Hansen</td>
<td>Monopostyle; deep recess in centre with steps.</td>
</tr>
<tr>
<td></td>
<td>&quot;</td>
<td>Colosseum, London</td>
<td>Durion</td>
<td>A monopostyle attached to a polygon.</td>
</tr>
<tr>
<td></td>
<td>&quot;</td>
<td>Hunterian Museum, Glasgow</td>
<td>Schinkel</td>
<td>Monopostyle, recessed, with a distyle in antis.</td>
</tr>
<tr>
<td></td>
<td>&quot;</td>
<td>County-hall, Chester</td>
<td>Harrison</td>
<td>Monopostyle, polyostyle, recessed. A double hexastyle.</td>
</tr>
<tr>
<td></td>
<td>&quot;</td>
<td>Wacht-Gebäude, Berlin</td>
<td>Schinkel</td>
<td>Monopostyle, recessed as a tetrapostyle in antis.</td>
</tr>
<tr>
<td></td>
<td>Pseudo-hexastyle</td>
<td>Front of Roman Catholic Chapel, Finsbury Circus</td>
<td>Harrison</td>
<td>Four pilasters and two columns beneath a pediment, or five intercolumns.</td>
</tr>
</tbody>
</table>

PORTLAND (Isle). [DORSETSHIRE.]
PORTLAND, DUKES OF. [PRTR.]
PORTLAND (America). [MAINE.]
PORTLAND OLITE, a term in geology, synonymous with epoelite 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
POR
429
POR
of a Grecian artist. The first information we have respecting
it, that is, the placing of a statue of the 4th century B.C., on which
the vase was found enclosed in a marlbo sarcophagus,
within a sepulchral chamber, under the mound called the
Monte del Grano, about two miles and a half from Rome
on the road leading to Frascati. This sepulchral chamber
seemed to be the burial-place of the statesman C. Severus
and of his mother Julia Mamaea; and the vase was
probably a cinerary urn belonging to the sepulchre.
Bar
tolli, in his work on Roman and Etruscan sepulchres (Gli
Antichi Sepolcri, 1713), notices the representation 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 workmanship
of the vase procured it a strictly speaking, that the sarcophagus
placed it, a place in the palace 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 antiquities.

This vase was said by Montfaucou to be formed of a pre
cious stone; but subsequent examination has shown the
material to be dark blue glass, relieved by figures and
decorations of, and resembling those of, the genuine
objects. Its form is tall, graceful, and beautifully curved from the top downwards;
the diameter at the top being about three inches and
a half; at the neck or smallest part, two inches; at the largest
part (middle height), seven inches; and at the bottom,
five inches; with two handles, one on each side. The height
of the glass is rich and beautiful, and is rendered still
more so by the contrast of the delicate white enameled of
which the figures are formed. These figures are seven in number, three men, three women, and a winged Cupid; but
the story or scene represented has never been satisfactorily
explained, although many attempts at explanation have
been made. Dr. King (Archaeologia, vol. viii.) endeavours to shew
that the scene represents some supposed mythological
relation to the birth and acts of the emperor Romanus Severus;
and other theories of a similar kind have been advanced.
The figures however, whatever may be their import, are placed in the following order:
on entering the ante-room one of the handles is first seen, having beneath it a wild-looking head, with long hair
and beard; near the handle (to the right) is a male figure
standing under a kind of porch, and offering his extended arm as a token of nobility; a female figure, whose head
bends the branch of a tree: a winged boy is hovering over
these two figures; and to the right is a man leaning his
elbow, in an easy attitude, on his knee, the foot being raised
on an arm of the same pose. When once past these, one comes
to the second handle, which has a head under it similar to
that on the opposite side; near this handle is a man seated
on a stoune, and looking at a female figure reclining in an
easy and elegant attitude, with an inverted torch in her left
hand, and the right passing over her; the branch of a
tree bends over her, and at her left hand is another male
figure, who is looking towards her, and holding a staff in
his left hand. These figures are about five inches in height,
and are modelled with minute accuracy. Benvenuto
Cicignon, different in colour and in opacity from the glass on which
they are laid, must have been fashioned before being
fixed on the vase; yet the union has been so complete that
no joint is visible, in the whole shape. Some of the figures have not been in the slightest degree injured
by the heat in which all probability was necessary for the process of cementation. At the bottom of the vase
is an emaciated head and bust of a figure whose hand is
elevated towards the mouth, and who has a fine Grecian
outline of face. As this part of the vase cannot be seen in
its present position, a cast of it is attached to the stand on
which the vase is placed. Dr. King was of opinion that this
part of the vase was broken, and was cemented to the
vase by a process different from that employed on the
other parts.

A mould of the vase was made by Pechler, the gem en-
graver, while it was on show in the possession of the Barberini
family. From this mould, the plaster of Paris was taken by Mr. Tasie, who afterwards
destroyed the mould. Mr. Wedgwood made a small num-
ber of copies of this vase, which were sold at about twenty
dollars each, in the fall of 1833, for an admiral defeat, which an admiral skill displayed in their production. The moulds
employed for these copies are, we believe, still in exist-
ence; but the extreme difficulty of the manufacture render-
their production, as a commercial speculation, unpro-
fittable in the last hundred years. Whether antique or imitated, either drawn or col-
oured upon a flat surface: in a more restricted sense it
signifies a drawing or a painting representing the likeness of any particular individual; but it is also frequently ap-
plied to the pictures of animals.

Portraits, says Lord Orford, is the only true his-
torical painting. Its uses are manifold; it administers to the
affections, it preserves to the world the features of those
who, for their services, have merited the gratitude of man-
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 the nation in question.

Portraiture seems to be almost as ancient as the art of
painting itself; indeed, according to the romantic legend
told by Pliny (Hist. Nat., xxxv. 43), it was in Greece
the origin of the imitative arts; an enamoured Corinthian
man traced the profile of his lover around his shadow cast
by a lamp upon the wall.

The most antient portraiture extant, if they can be termed
such, are those which have been found in the cases of mummies: there is a single fine specimen of these
preserved in the Egyptian museum of the Louvre in Paris;
and there is also one of mean execution in the British Museum.
It was a custom among the antients, in very early times,
for warriors to have statues made in their shields, called by the Romans imaginis clipeorum, or
imagines clipeatae, and these shields were frequently deci-
lated in the temples in honour of their owners when they
deceased, or placed by victors as trophies (clipei votivi).
The portraits were most probably painted in wax, but that they
were well executed is very doubtful. (Pliny, xxxiv. 3.)

Among the Romans, in the time of the republic, the
possession of the portraits of their ancestors (imagines ma-
ternorum) was a mark of noble birth; but none were permitted to make portraits of themselves ex-
cept those who had themselves or whose ancestors had
borne some curule magistracy; and Roman families were
beyond the reach of that custom, and by their descendants
their antient nobility. (Cic, In Pisonem, l.) These
portraits or images, which were of wax, were preserved with
great care by their posterity, and were only brought out
upon great occasions or carried before them in funeral pro-
cessions. (Pliny, xxxiv. 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 Lysippos the brother of
Makisippus. 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 Apelles. One of his most celebrated pic-
tures was a portrait of that monarch as Jupiter, called the
'Alexander Cœurnaphoros,' for which, according to the in-
credible account of Pliny (Hist. Nat., xxxv. 10, 38), he received twenty
thousand talents of gold (upwards of 30,000l. sterling). The reason of this sum,
that it was meant to be a cast in bronze ("mensura,
non numero"). Most of the pictures of Apelles were por-
traits in an extended sense, yet it is doubtful whether before
POR

430

POR

time of the Roman emperors there was a distinct class of painters who confined themselves to portraits ("imago" or images of pictures: Pliny, xxxv. 11, 40). Even in the great days of Italian art there was not a distinct class of portrait painters. Most of the greatest artists were all-round artists, and their portrait work was a side-line upon their main work. The fact, however, that 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 value of a portrait depends upon the sitter as a person and as upon the painter, and it may be spoiled by the bad taste of the one or the other. Excellence in portraiture consists in placing every feature in its proper place, in a correctness of expression, an judicious arrangement of light and shade, in accordance with the complexion of the subject, and in tasteful art 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 said to be shown by the portrait; and there is a chance which appears most natural to his sitter, for the habits of nature must be distinguished from those of fashion; no defect is more striking in a portrait than a forced and affected attitude.

In every portrait the countenance of the person represented should constitute the picture; all accessories must be subordinate to the principal object, and should not engage the attention except when expressly examined, for they are the effects not the causes which indicate the sitter, 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 it is a feature of every portrait that any attention which it demands for its local importance 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 clothed as usual, and the more the stronger and comparatively the more important will be the head, which is the principal object. Whatever derivation of the finder, and from this principle the portrait may perhaps gain in pictorial effect, it must lose as a portrait. A mere insulated transcript of the features, and an equally minute attention to the detail of the accessories, is a degradation of portrait. There is no essential 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 canvass, where the head is a small picture generally so light and indistinct in the mass of figures, 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 Idoles (tutuées) rather than portraits (PANAENUS).

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 an otherwise good picture may be rendered a very bad portrait through the judicious adoption of some transitory expression, or the introduction of a smile put on for the occasion, when perhaps the moral is spoilt from the very smiles large and dignified. 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 of the sitter and the accessories, 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 parts; the indicated resemblance 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.

Such portraits even of only tolerable resemblance are generally pronounced to be striking likenesses, especially by those who have but 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 were La Tour, da Vinci, Raphael, Sebastian del Piombo, Giorgione, Paris Bordone, and Titian. In the reign of Rembrandt, and Vandyck; and the following pictures are amongst the finest specimens of portrait painting extant:—his own portrait by Leonardo da Vinci, in the Louvre; his portrait of Pope Alexander VI. by Sebastian del Piombo, 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 Windsor; the portrait of Velasquez, in the Palazzo Doria at Rome; the Meyer Family, by Holbein, in the gallery at Dresden; and the head of Georgiutus, by Vandyck, in the National Gallery in London.

Of late years portrait painters in the last half of the century are recent. Mengs, Reynolds, Gainsborough, David, 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 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 the mouth of the Eastern Solent to Calshot, a village close to Chichester in Sussex; 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 Langstone harbour; and the eastern part, between Hayling island and the main, the False Bay or Solent. The Isle of Wight, between Cowes and Ryde, is the Manchester, or an anchorage for smaller vessels.

The excellence of the port attracted the notice of the Romans, who founded a station on its northern shore; this was probably the Portus Trojanus, or 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-eye, 'the island of the port'), Portsmouth, Portsdown, and Gosport. The decline of Portchester, where there are still some Roman remains [Hampshire], is ascribed to the retreating of the sea, in consequence of which the inhabitants removed to this southern promontory, which was called the 'false sea' from the circumstance of the Isle of Wight, between Cowes and Ryde, being in the Manchester, or an anchorage for smaller vessels.

The excellence of the port attracted the notice of the Romans, who founded a station on its northern shore; this was probably the Portus Trojanus, or 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-eye, 'the island of the port'), Portsmouth, Portsdown, and Gosport. The decline of Portchester, where there are still some Roman remains [Hampshire], is ascribed to the retreating of the sea, in consequence of which the inhabitants removed to this southern promontory, which was called the 'false sea' from the circumstance of the Isle of Wight, between Cowes and Ryde, being in the Manchester, or an anchorage for smaller vessels.

The excellence of the port attracted the notice of the Romans, who founded a station on its northern shore; this was probably the Portus Trojanus, or 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-eye, 'the island of the port'), Portsmouth, Portsdown, and Gosport. The decline of Portchester, where there are still some Roman remains [Hampshire], is ascribed to the retreating of the sea, in consequence of which the inhabitants removed to this southern promontory, which was called the 'false sea' from the circumstance of the Isle of Wight, between Cowes and Ryde, being in the Manchester, or an anchorage for smaller vessels.

The excellence of the port attracted the notice of the Romans, who founded a station on its northern shore; this was probably the Portus Trojanus, or 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-eye, 'the island of the port'), Portsmouth, Portsdown, and Gosport. The decline of Portchester, where there are still some Roman remains [Hampshire], is ascribed to the retreating of the sea, in consequence of which the inhabitants removed to this southern promontory, which was called the 'false sea' from the circumstance of the Isle of Wight, between Cowes and Ryde, being in the Manchester, or an anchorage for smaller vessels.
French. Edward IV. and Richard III. secured it by fortifications; which were completed by Henry VII. 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 inexcusable exaggeration to employ 4,000 men and 100 ships in the place of 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 assailed by a gale, and a garrison was established in fortified for the parliament. 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 Queen Anne) as to be now III. in size. It is said to require a garrison of 13,500 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 southwestern 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 1831, 1195 houses (beside 6 buildings 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 East Street, and in the buildings at the end of High-street. North of Portsmouth is Portsea, considerably larger than Portsmouth, extending along the harbour, and containing the dock-yard and the principal establishment of the Royal Navy, the last century having been the most active. Southsea is 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. Outside 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 of stone, especially those in the buildings, though mostly 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 salterns, and the kingfisher, a southern extremity of the island, which is in Wimborne parish.

The mouth of Portsmouth harbour is about two miles wide between Fort Monkton and Southsea Castle, two strong forts erected in 1748 by the Duke of Newcastle, and is connected with the main passages by causeways between Fort Monkton and Southsea Castle, and on the stream called the Medway, which is navigable for vessels of from 200 tons burden. The entrance, being one of the most important in the kingdom, is defended by a battery, which has a garrison of 13,500 men, to man the works and 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 southwestern 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 1831, 1195 houses (beside 6 buildings 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 East Street, and in the buildings at the end of High-street. North of Portsmouth is Portsea, considerably larger than Portsmouth, extending along the harbour, and containing the dock-yard and the principal establishment of the Royal Navy, the last century having been the most active. Southsea is 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. Outside 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 of stone, especially those in the buildings, though mostly 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 salters, and the kingfisher, a southern extremity of the island, which is in Wimborne parish.

The mouth of Portsmouth harbour is about two miles wide between Fort Monkton and Southsea Castle, two strong forts erected in 1748 by the Duke of Newcastle, and is connected with the main passages by causeways between Fort Monkton and Southsea Castle, and on the stream called the Medway, which is navigable for vessels of from 200 tons burden. The entrance, being one of the most important in the kingdom, is defended by a battery, which has a garrison of 13,500 men, to man the works and forts, in case of a siege. The moats, which are wide and deep, can be filled with water from the sea.

The population of Portsmouth has been given: that of Portsmouth, in 1831, was 42,306; of Portsmouth and Portsea together, 50,389. (Pop. Return.) Of the inhabitants of Portsea, 14,874 were in the town, 23,323 in the suburbs. (Rep. of Commissioners.) The residence of Portsea parish is given in the same Return at 4988 acres; the number of inhabited houses at 8215, besides 57 building and 327 uninhhabited; and the number of families at 9767. The trade of the place, which is considerable at all times, but especially in time of war, is in the payment of the 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 roads of Spithead and the Solent. (Pop. Return.) In 1851, the population of Portsmouth was 103,192; that of Langstone, 5257; and that of the island of Portsea was 21,211. (Rep. of Commissioners.) There is considerable coasting and foreign trade carried on. The Portsmouth and Arun Canal was originally carried nearly across Portsea Island (entering it from Langstone harbour, across which the canal boats are towed by steam) to its terminus in a capacious basin at Langstone;
but the creek at Portsbridge has, since the last peace, been enclosed, being at present used as a dock. Barges have 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 thirty years), and also of cattle, from the Isle of Wight and from the west of England. Fifty thousand sheep have been brought in in a single year. Corn and provisions are brought in from Ireland, eggs from France, timber from the Baltic. Many building materials are imported direct from the Continent. 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 from Portsbridge, Wight, 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 weekly fair of fifteen days from the 10th of July; and a holyday fair, held on Portsdown 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 confirmed, and 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, the whole being distant from the jetties. By the Borough 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 franchise was extended to include all rates 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 Requests, and a Court of Sessions. 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 craft nor trade. The place is much neglected, but the discipline is considered too lax. (Inspectors of Prisons' Third Report.) The average number of prisoners is 50. Portsmouth first returned members to parliament in 1621; the number of voters, before the Reform Act, was very small, but is now considerable. The number on the register in 1835-36 was 1439.

The living of Portsmouth is a vicarage, of the clear yearly value of £700, with a glebe house. The living of Portsea is also a vicarage of the clear yearly value of £366, with a glebe-house. The perpetual curacies of the chapels are, in clear yearly value, as follows: St. George's, £545, with a glebe house; St. John's, £415, with a glebe house; St. Paul's, £342, with a glebe house. The living of West End Portsea is patron of these, except St. John's, to which the proprietors of pews present.

There were, in 1633, 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 250 to 500 boys; 'The Portsea Institution,' for 110 girls; two Lanchester schools, with 350 boys and 112 girls; two national schools, with 409 boys and 166 girls; 'The seamen's school,' with 210 boys and 80 girls; a 'national school of industry,' with 40 boys and 40 girls; two workhouse schools, with 70 boys and 69 girls; and four free schools, wholly or partly supported by subscriptions. The whole number of children attending these schools is 271 children of 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 these 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 supported by subscriptions. The teachers 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 association; a Terrace Literary Society, with a valuable collection of books; and a Mechanics' Institution.

Beside the fortifications of the two towns of Portsmouth and Portsea, the island of Portsea has strong defences. On the southern extremity is Southsea Castle, built by Henry VIII., mounted with heavy cannon, and commanding the approach to the harbour from the eastward; and on the eastern point, at the entrance to Langstone harbour, which it commands, is Fort Cumberland, a large fort, connected with a battery on the island. The entrance to the island from the north is defended by lines, carried along the bank of the channel which separates the island from the mainland, and by other works at Hilsea, four miles from Portsmouth. Fort Monkton, which commands this part of the harbour, is one of the forts corresponding in situation to Southsea Castle on the east, is not on Portsea Island, nor are the fortifications of the town of Gosport, on the shore of the harbour opposite Portsmouth, but both have strong lines in front, and the system of defences which protect Portsmouth harbour.

PORTUGAL. THE KINGDOM OF, is the most westerly kingdom of Europe. It forms part of the Spanish peninsula, and is not divided from Spain by any well defined natural boundaries. All the great rivers of Portugal, the Minho, the Douro, the Tagus, and the Guadiana, have their sources in Spain, and belong to Portugal only in the lower part of their basins. The Mondego is the only considerable river which has its source in Portugal, and its whole course within the limits of Portugal. Portugal is bounded on the north by the Spanish province of Galicia; on the east by the Spanish provinces of Leon, Estremadura, and Andalusia; and on the south by the Atlantic Ocean, being at a distance of about 250 miles from north to south, and its breadth varies from 90 to 125 miles. Its area is reckoned at about 37,900 square miles, or about 10,000 square miles more than the area of England, or about 6600 square miles more than the area of the British dominions of about 500 miles face the west.

Mountains, &c.—The country is intersected by several ridges which are a continuation of the chains which cross Spain from east to west. In the north, the Serra de Abego, the Serra de Leboreiro, and the Serra de Mornes, which divide the waters of the Minho from those of the Douro. It enters Portugal north of Braganza, and covers the greatest part of the province of Tras os Montes and Douro, and forms the peninsula of the Douro. The Serra de Alcoboa, which divides the basin of the Douro from that of the Mondego; and south of the Mondego is the Serra de Estrella, a continuation of the Sierras de Gata, which is the western part of the great central ridge of Castile that divides the waters of the Douro from those of the Tagus and the Mondego. The Serra de Junto, which is a continuation of the Estrella, runs nearly parallel to the Tagus, and terminates in the high promontory called Cabo da Roca, the most westerly point of the continent of Europe. The highest summits of the Serra de Estrella are between 6000 and 6500 feet above the sea.

South of the Tagus, the Sierras de San Pedro, a continuation of the Serra de Estrella, and the Serra de Bialete, and divides the basin of the Tagus from that of the Guadiana. Further south is the Serra de Monchique, which may be called a continuation of the Sierras Morenas, being separated from it only by the course of the Guadiana.

The great chains of the Portuguese mountains have a general inclination from north-east to south-west, and they throw off numerous oases, which cover a great part of the country. Between these chains are the three great basins of the Douro, Mondego, and Tagus. [BEIRA; ESTREMADURA (Portuguese)]. South of the Tagus is the plain of Alentejo, the largest in Portugal, which is divided on the south-east by the mountains of Portalegre, Évora, and Alentejo, the western part of which is on the Spanish frontier. To the west and north, the Tagus separates them. Respect from the other great rivers of Portugal, has a general direction from north to south, and belongs, even in its lower course, partly to Portugal and partly to Spain. The province of Algarve, situated on the south coast of the kingdom, is separated from the rest by the Serra de Monchique, and forms a strip of land between the mountains and the sea, which has a general slope to the south, and is traversed from north to south by six large rivers.

Climate, Productions, &c.—The climate of Portugal presents considerable variations in the northern and the southern provinces. The southern provinces are very similar to those in the western part of Spain. The climate of the whole however the climate may be said to be healthy, with the exception of a few spots south of the Tagus and near Scubal. The products of the country are—corn, Indian corn, rice, hemp, flax, honey, wax, plenty
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 on the island of P. 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 and copper are manufactured. The worsted manufactures are Woolen cloths in Alentejo 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 many potteries at Alemequ, Lisbon, and Guimaraes; potters at Lisbon, Oporto, Coimbra, Beja, Estremoz, and Castela; cotton manufactories at Aledo 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. Between 22,000 and 25,000 marriages, and the difference has forcibly struck most travellers who have crossed the eastern frontier of Portugal, which in several places is not marked by any geographical boundary. The people are 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 clean, and the people lively. Castellers were raised, which behavied 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, insinuating, fond of conversation, and perhaps more pleasing in their outward address than the generality of the corresponding classes in Spain. The 'filigéos,' or provincial nobility, are very numerous, though mostly poor. Foreign travellers of distinction, who have not had any regular education, which has in some degree contributed to the advancement of astrology, 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 sessions at Lisbon. A society for the encouragement of national industry was established in Lisbon during Dom Pedro's reign. 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 standstill. The number of the presses in Portugal in the year 1827 was reckoned at a little more than two million, and the expenditure exceeded it by nearly half a million. The present revenue of Portugal is 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 those 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 at all adapted to the use of large vessels. The government has made progress; but few if any of the products of Portuguese industry can enter into competition with the corresponding articles of foreign manufacture.

Religion.—The people of the kingdom besides Lisbon, where there are an arsenal, dockyard, marine school, and other naval establishments. The land forces of Portugal have lately varied between 22,000 and 25,000, and some of the regiments 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 into judicial districts, many of which were afterwards subdivided into sixty-six districts, namely, Entre Douro e Minho, Tras os Montes, Beira, Estremadura, Alentejo, Algarve. Each province was divided into comarcas, and each comarca into administrative districts. A district was subdivided into a parish, and each parish was subdivided into a proper head. The Cortes have lately made a new territorial division of the kingdom into twelve provinces, which are subdivided into twenty-six comarcas, which are again further divided into judicato districts. These districts, with the exception of the province of Beira, are inseparably connected with the different counties, and the representative of the counties is office.
popular representation in Portugal occurred in 1143, when the three estates met at Lamego, to confirm Alfonso I, in the title of king, which he had received from the hands of the bishops of Coimbra, after the battle of Ourique. Again, in 1181, and in the lifetime of Alfonso, the Cortes met, and gave the nation the celebrated code and constitution known as the "Laws of Lamego." By this constitution the Church was made independent in the royal family, but could pass to the collateral lines only with the consent of the estates. If the king left no male issue, the succession devolved on the eldest daughter, who married a prince or a noble; but if she gave her hand to a foreigner, she was ipso facto excluded from the throne. Hence Beatrice, daughter of Ferdinand, was deprived of the succession for having married the king of Aragon. But the independence of Portugal, which those of other states in the Peninsula, fell by the repeated attacks and encroachments of the crown and the inability or unwillingness of the people to defend their rights. The kings of the house of Braganza ruled despotically as their predecessors, and the constitutional liberties of Portugal were forgotten. At last, in 1820, after a momentary adoption of the Spanish constitution, a new one was framed, the principal features of which were a conditional veto in the king, only one chamber, and the election of the deputies to be made by electors chosen by the people from among all landholders paying a direct tax of about ten shillings. This constitution was abolished in 1823. In June, 1824, John VI. issued a decree creating a grand council of old citizens to aid the Cortes of Lamego; but the Spanish government, fearing that the example of Portugal might awaken a similar feeling among their subjects, opposed the measure, and it was not put into effect. In April, 1826, Dom Pedro granted his subjects a constitution, which established two chambers (the members of the higher being hereditary), and in other respects resembled the French constitution. A monarchy in its tendency than that of 1820, the curta de Dom Pedro satisfied the enlightened part of the nation; but it was strongly opposed by the Sephardim, or partisans of the old one, who more than once succeeded in overturning it and establishing the old order. At last, in 1836, another revolution, neither so free as the former nor so monarchical as the latter, was sanctioned by the Cortes. This constitution established two chambers, both elective, and determines that 160,000 can be an electoral fund, which possesses an income of 50,000 reis (20L) arising from landed property.

By the separation of Brazil, the Portuguese monarchy has been shorn of the brightest jewel of its crown. The remaining dependencies of the colonial archipelago, 1. Angola; 2. Madeira; 3. the islands of Cape Verde [Verögo]; 4. the islands of San Tome and Principe; 5. the capitanancy or government of Congo of Angola; 6. the government of the eastern coast of Africa, the government of Goa in the East Indies; 8. that of Macao on the coast of China; 9. some small settlements at Timor and other neighbouring islands: all these are described under the above heads. Most of these Portuguese settlements, especially those on the coast of Africa, are in a state of decay. The wretched state, both physical and moral, of those on the Mozambique coast, is well depicted in Captain O'Call's "Narrative of Voyages, to explore the coast of Africa, Arabia, and Madagascar." It is impossible to ascertain the population of all these dependencies, some of which, such as Congo and Mozambique, include large inland tracts of country, which are only nominally subject to the king.

(Miñoano, Diccionario Geográfico de España y Portugal; Balzi, Statistique du Portugal; Kinsey, Portugal Illustrated.) The early history of Portugal cannot conveniently be separated from that of the other kingdoms in the Peninsula. The Iberians and the Celts were the oldest inhabitants of the country; and it is to be inferred that the Phoenicians were the first to visit its shores. When the Carthaginians invaded the Peninsula, their general Hamilcar overran and subdued its western provinces. The Romans, who succeeded the Carthaginians as masters of the Peninsula, governed by their governors the province of Lusitania, the ancient limits of which have been variously defined by different authors. Strabo (ii., p. 132) intimates that it extended from the Tagus to the Ocean on the north and on the west, and was bounded on the east by the Carpathian, Vevoton, Vaezis, and Cailaei. But when Augustus had divided the Peninsula into three provinces, Baetica, Tarraconensis, and Lusitania, the last only comprised the country between the Douro (Durius) and the Guadiana (Ancas), extending on the eastern side as far as Libora (now Talavera) and Augustobriga (now Puente del Arzobispo) and on the western side as far as the Tajo (Tagus) and Turduli, a district of [Sapin], all of whom were rude but warlike people, who made several attempts to shake off the yoke of the republic. Virrius, who contended so long and so fruitlessly for the friendship of the Teutones and Cassian shepherd. When Spain was subdued by the Germanic tribes, Portugal shared in the general devastation; and when, at the beginning of the eighth century, the torrent of Arab conquest spread over the Peninsula, the territories and towns of Portugal were so easily subdued as the remainder of Spain. [Moors; Musa.]

During the first century after the Saracen invasion, Portugal 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 Mohammedans, and became subject to local governors dependent on the counts of Galicia. The south still remained in the hands of the Moors until the beginning of the twelfth century, when Santarem, Lisbon, and Cintra were reduced by Alfonso VI., the conqueror of Toledo. As these conquests however were continually exposed to the irruptions of the Moors, or the raids of the Scandinavian invaders. In the middle of the twelfth century, Henry the son-in-law Henry of Besançon, who was descended in a direct line from Hugues Capet, the government of the subdued territories from the Minho to the Tagus, with the title of count, by the same time had established his residence at Guimaraes, was permitted to hold in his own right whatever conquests he might make from the Moors beyond the Tagus. In this manner he reduced most of the Moorish castles and forts which were built by the Astures and the Moors. In 1141, when Alfonso succeeded to the dignity of count, the Castilian king had previously rendered hereditary in his family. The new count proved a more formidable enemy to the Mohammedans than even his father. In 1139, having resolved to reduce the Moorish castles of the Tagus, he assembled a powerful army at Coimbra, and advanced towards Batalho, the governor of which place, having received commons, or the offerings that the Moors had to meet him. The Moors were however defeated with great loss at Ourique in 1139.

Portugal under the Kings of the House of Burgundy. In 1139 Don Alphonso established himself as the king of the Castilian line had for some time contemplated throwing off his allegiance to his lawful sovereign, caused himself to be proclaimed king by the soldiers. The Cortes of Lamego confirmed his title, and gave to the new king, who acknowledged 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. In 1162 he founded the two military orders of Avis and San Miguel del Alca, which still exist. The remains of his reign were spent either in war with the Moors, or in defending his dominions against the kings of Castile and for some time the two monarchs disputed the crown. This king, whose memory is held in the greatest veneration by the Portuguese, died at the close of the year 1183. He was succeeded by Sancho I., his eldest surviving son, whose reign was marked by no means so brilliant a career. In 1189 he died without issue, and was succeeded by Sancho II., who was a vigorous and able monarch, but who died without issue. He gave all his attention to the prosecution of the war against the Mohammedans. Though he was not present at the battle of Aljubarrota (1212), he nevertheless sent to Alfonso III. of Castile his contingent of troops. In 1179 the arrival of
another fleet of crusaders in his port led him to undertake, with their aid, the siege of Alcazar 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., who succeeded him in 1223, was

animated by the same military ardour. Soon after his accession, he recovered Elvas, Jarumelina, and Serpa. He then作文 assembles in Alentejo, and victoriously engaged 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 the frontiers of the territory of the princesses, under the influence of the frontier fortresses, reduced Tavira, Faro, Loule, and other towns in Algarve. The populous city of Silves, which had been regained by the Mohammedans, was likewise recovered, as well as the territory of Enxente. In 1226, 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 consequence 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 degraded monarch retired to Toledo, where he ended his days early in 1248. Alfonso III. completed the conquest of Algarve, which his predecessor had begun, and was then called the "Restorer." Though he owed this appellation to Sancho I. it justly merited the name, and did little dissonance to 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 the conquest become too large. In both instances however he was forced to yield. Alfonso died in 1279, and was succeeded by his son Dinis, who, like his father and most of his predecessors, was brought up at the church. Having at last convoked a meeting of his prelates, he effected a reconciliation with the church by yielding in most points. though he 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 the king 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 the infidels, 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," which is the title bestowed on his eldest son. 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. Although he was not a poet, he was a generous patron of science, which he fostered in his states. In 1264 he laid the foundation of a university in Lisbon, which he afterwards (1268) transferred to Coimbra. With the converted possessions of the Templars, he founded and endowed the new military order of Christ.

Dinis was succeeded in 1325, by his son Alfonso IV.,...
from this moment Portugal derived from that coast a considerable profit in ivory and gold, which supplied ample resources for new enterprises. Thus Pedro da Cauy, Alfonso da Paya, and Afonso de Aybar, entered 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 Africa, Alfonso da Cauy went as far as Congo, and returned to Lisbon, while Afonso de Aybar, after going to Abyssinia, again rejoin each other in a given period at Cairo. Civilian 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, where 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 king of Benin and Congo were first discovered, the former to be subdued by a letter by Jean de Cam. [Benin; 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 Bartolomeo Dias discovered and explored the coast of western Africa from the Cape Verde islands to the southern cape of Africa, beyond which no commerce was ventured. This active spirit received the name of Cabo de Boa Esperanza. [Cape of Good Hope; Africa.] The success of these expeditions, and the wealth which the commerce of the newly discovered countries poured into the coffers of Portugal, may perhaps be some excuse for the neglect with which the proposals of Columbus to seek new lands in the west were received at the Portuguese court. However, no sooner did the matter of the discovery of a new continent become known in Portugal, than Joam fitted out a fleet for the west. This led to a dispute between Portugal and Castile, which Pope Alexander VI. finally settled by a line of demarcation drawn one hundred leagues west of the Azores and Cape Verde Islands, thus separating the future conquests of the two nations. [Columbus; America.] Joam II. died universally regretted, in 1495. He was succeeded by his nephew, Manoel, who steadily pursued the career of maritime discovery.

About the close of 1497 the passage to India by sea was effected by a squadron of five vessels, under the orders of Vasco da Gama, who returned to Lisbon in September, 1499, having discovered Aden, of little more than thirteen vessels was next fitted out and sent in the same route, under the direction of Pedro Alvarez Cabral, who discovered Brazil, and touched afterwards at Quilla, Callin, Coroa, and Barzil, with which he remained in the sea. In 1502, Vasco de Gama, being sent to India a second time, with ten sail, permanently established the Portuguese authority in India. [Gama, Vasco de.] The next considerable armament which the Portuguese king fitted out for India consisted of thirteen vessels and 1200 men, which were put under the orders of Lope Suares. Soon after Francisco da Almeida was sent to administer the Portuguese possessions in India. His son Leandro took possession of the Maldives Islands, and established factories in Ceylon, while other expeditions, sent in various directions, formed commercial establishments on the island of Sumatra, as well as on the island of Malacca. His success in the conquest of Malacca was replaced by one of the ablest captains of his age, and the Portuguese flag waved triumphantly along the vast African continent from the Straits of Gibraltar to Abyssinia, and along the Asiatic from Ormuz to Siam. [Almeida; Suares.] Thus began the most important commercial city of Europe; and Portugal, the most insignificant of the European states in extent of territory and population, grew a powerful monarchy.

In the reign of Joam III., who succeeded his father Manoel in 1521, Indian discoveries and commerce were still further extended. But the rapid accumulation of the precious metals at home without a corresponding increase of domestic industry, and the loss of so many of her most vigorous youth, who were sent to extend or defend her conquests, began to be as sensibly felt in Portugal as they afterwards were in Spain. The introduction of the Inquisition, in 1536, which, as in Spain, was at first intended only against the Jews, greatly contributed to increase the misery caused by bad administration and the vicious course of her nobility. But this tremulous effort of the enlightened Joam II. had allowed the Jews to settle in his dominions, but he had subsequently been persuaded by his wife, a daughter of Isabella, to revoke his permission, and to issue an order that all the Jews living in Portugal should embrace Christianity, and leave the kingdom, unless they were willing to submit to the penalty of being deprived of their children and made slaves. Many thousands having been induced by this measure to conform publicly at least to the Christian usages, while they secretly adhered to their old faith, the Inquisition began to search out the delinquents, against whom, when discovered, the most revolting cruelties were practised. The Jews were exterminated, or fled from Portugal: but although the object for which that tribunal was instituted, no longer existed, it still continued a powerful political weapon in the hands of the absolute kings of Portugal. [Orfice, Holy.] As injurious in its consequences as the Inquisition, the Portuguese exigency of new wars, under Joam, the first European monarch who permitted them to enter his dominions. [Jesus; Loyola.] The education of his grandson, Sebastian, the heir-apparent to the throne, was likewise entrusted to the Jesuits, who inspired him with the heroic spirit of the great Charles V. of Spain, and the fanatical ambition 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.66180,. Neither she nor her son were fitted to undertake the great enterprise of regaining the African possessions. When in his fourteenth year—the period of his majority—when he began to turn all his thoughts towards the prosecution of the African war; and he sailed in 1574, in opposition to the remonstrances of his council, in the S. Vincent, in order to search for the lost cooking ships in the Guinea coast. In 1574, the memorable battle was fought by which Portugal lost her last and greatest possession.
son Alfonso 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 prince of the line of Braganza displayed more wisdom and vigour than he actually did. Pedro II, who succeeded his brother Alfonso 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. Despite the French under the treaty already 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 adva...
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, established a provisional government under the presidency of the patriarch of Lisbon, who had been banished from the kingdom. Dom Miguel, after insidiously assuring his father of his determination to uphold the constitution, returned to Portugal, where he was received by some thousands of the populace, openly declared against 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 from church property restored, the patriarchy of Lisbon recalled, Count Amarante reinstated in his rank and rights, several members of the Cortes imprisoned or exiled, and the liberty of the press abolished. But Joao 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 restoration of the kingdom. The king again failed through the intrigues of the apostatical party, supported by France and Spain; the queen returned to Lisbon, and Amarante made his entry into the capital, and the opposition proceeded to the insurrection, the news of the town where he had organized his insurrection against the Cortes. Dom Miguel, who had been appointed commander-in-chief of the army, and invested with supreme power, marched on the opposition with men disaffected to the cause of absolutism. He also mediated an expedition to Brazil, but an exhausted treasury prevented him from carrying his plan into execution. At last the absolutist party determined to annul all the hopes of the constitutionalists, and to restore the status of monarchy to which 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 church property restored, and to surround himself. 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 conspiracy 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, Joao VI. went on board the English man-of-war at anchor in the Tagus, where, having sent for the diplomatic body, he deprived his son of command, and summoned him to his presence. Dom Miguel obeyed, confessing that he had been deceived and misguided, and received the pardon of his father. 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 occasion appeared a decree reviving the ancient 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 execution. In 1825, after many difficulties and protracted negotiations, the independence of Brazil was finally acknowledged by Joao VI., who merely retained the imperial title.

Early in March, 1826, Joao VI. died, after having named the Infanta Isabel regent. She administered the kingdom in the name of her son, Pedro, 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, Dom Miguel I., the last king of the house of Braganza, was deposed in favor of Dona 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 Joao VI. and took refuge in Spain; by the two chamber, and by all the magistrates, and by Dom Miguel himself at Vienna in 1826. The marquis of Chaves and the marquis of Abrantes appeared at the head of an army of insurgents, and Spain assembled considerable forces on the Portuguese frontiers; but Portugal having appealed to England for assistance, 15,000 British troops were landed in Lisbon, and the insurrection was completely put down. In July, 1827, Pedro appointed his brother Miguel lieutenant and regent of the kingdom. The prince accordingly left Vienna, and passing through Paris and London, arrived at Lisbon in February, 1828, soon after which, in the presence of the two chambers, he took the oath to observe the charter. But the apostatical party, to whom the disposition and temper of the regent were well known, began openly to speak of Miguel's right to the throne. A revolution followed, and conse- quently the decision of Mr. Lamb, the British minister, who not only countermanded the order for the departure of the British troops then in Portugal, but prevented the payment of a loan made to Dom Miguel under the guarantee of the English government. At last, after delaying the Cortes, who were opposed to his designs, and seeing the departure of the British troops, Dom Miguel issued a decree in his own name convoking the ancient Cortes of Lamego. Part of the army however were not satisfied with his projects, and on the 18th of May, Dom Pedro and the charter were proclaimed by the garrison of Oporto, which, being increased by other garrisons, marched against Lisbon. They were defeated in the battle of Ourique, and the king and his ministers fled to Spain. The Cortes, which was convened as a constituent assembly, declared Dom Miguel a tyrant, a traitor, and a usurper; and the French forces, with the object of forcing their way to the Spanish frontier or embarked for Great Britain. Miguel now turned all his attention to the consolidation of his power. Having caused the Cortes to adjourn, and to reform itself in the form of a constituent assembly, he proceeded to drive out all the French sovereign of Portugal and Algarve, chiefly on the grounds that Dom Pedro had forfeited all right to the crown, as well as to the appointment of a successor, by becoming a Brazilian citizen, and not residing in Portugal. On the 7th of July, 1826, Dom Miguel, in compliance with the decision of the Cortes, assumed the royal title. He immediately established a special commission to try all those who had taken any part in the Oporto insurrection; the prisons were crowded with prisoners, in which the countries were filled with Portuguese emigrants. An expedition was likewise sent to those islands which refused to acknowledge his authority, all being reduced, with the exception of Terceira, where, in March, 1830, a regiment, appointed by Dom Pedro, and consisting of Palmella, Villa- flor, and Guerreiro, was installed. The other islands were soon taken over by the forces of the regency, and Dom Pedro having arrived in Europe, the regency was made to dethrone the usurper. Meanwhile Portugal was a prey to violent political commotion. Insurrections broke out everywhere, trade was suspended, and the relations of Portugal with the rest of Europe were even severer than before.

In consequence of some acts of violence against British subjects, and a refusal of redress on the part of the government, the English government sent out a fleet to the Tagus, but on its appearance before Lisbon, May, 1831, the concessions required were granted to Great Britain, the result of which was that in consequence of similar demands of the French government not being complied with, a French squadron forced the passage of the Tagus, and took possession of the Portuguese fleet, which was not restored until full satisfaction was given, besides an indemnity for the expenses incurred by the expedition.

On the 24th of February, 1832, the naval forces of Dom Pedro arrived off Terceira, of which island they took possession in the name of Dona Maria, as lawful queen of Portugal. Three months after (June, 1832), an expedition 10,000 strong sailed from St. Michael's in the Azores, and landed on the island of Madeira, where the regency took without opposition. The Miguelete forces laid siege to Oporto, but were defeated in several engagements by the troops of Dom Pedro, who were chiefly composed of English regiment in service, the fighting being reduced to the greatest extremities, and the wealthy merchants in the city were almost ruined by the wanton devastation committed in their wine-vaults by the royalist troops, an expedition was fitted out by means of a local raid in England. On 17th March, 1834, Dom Pedro, enraged by the recent victory won by Admiral Napier over the naval forces of Dom Miguel, sailed with part of his forces for Lisbon, of which he took possession with compara-
In the meantime the army of Dom Pedro prosecuted its success. Early in 1834 the strong town of Leiria was taken from the Miqueles by Marshal Saldanha; and in April a Spanish army under General Rodriguez de Varela, for the purpose of seizing the person of the Infant Don Carlos, the pretender to the Spanish crown, who, with a few followers, had crossed over the frontier and taken refuge in Portugal, was sent in pursuit of him. 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 establishment of order in Portugal, Dom Carlos and Dom Miguel from the Portuguese territory. On the 26th of May, 1832, after the surrender of Santarem and other places, Dom Miguel was obliged to capitulate and sign the convention of Espronceda. He was, however, 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 the new sovereign was to remedy the abuses 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 confirmed in the sovereignty; and in the following month the declining state of his health having induced him to resign his office, the Cortes in consequence declared the young queen of age. Having therefore taken the oath acquir'd powers, she assumed the title of Queen of Portugal, and received the homage of her father's dominions.

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 differences in its grammar and vocabulary, there can be no doubt that the Portuguese was formed earlier than the Castilian. It might more properly be called a dialect of the Galician, to which it had at first great affinity, and which it now resembles so much that the uneducated people of both countries speak it as one language. The canções of Alfonso X. were written in Galician, and long after the formation of the Castilian dialect Leonte and Castilian poets used the Galician or Portuguese dialect as a medium for the expression of popular songs. 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 languages and popular poetry distinct. When John the Unconqueror fixed his court at Guimaraens, the French knights who came with him introduced a considerable number of French words into the language of the country. The great efforts too 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 analysing all those who adopted the Spanish language in their writings, may be mentioned as one of the means which mainly contributed to render the tongues of Spain and Portugal still more dissimilar. The Spanish, like the Portuguese, has many words borrowed from the Arabic. Their wars with the Moors of Morocco and of the South during the fifteenth century introduced into it many others from the languages spoken in those countries. Father Joao de Sousa published, in 1749, a vocabulary containing not less than 1,400 words derived from the Arabic, chiefly from the medical, as a means towards a conversational language, the Portuguese is considered superior to the Spanish. It is more concise, easy, and simple, but not so rich. The pronunciation is difficult for a foreigner, more particularly the nasal sounds, in which it abounds. The gutturals however are neither so strong nor so common as in the Spanish; but it must be admitted that the clipping pronunciation of s and a, whenever these vowels occur in combination, is a peculiarity in the Portuguese. The figures are presented from to and la, together with the compounds formed from them, as no 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, palatin, padre, madre, &c. into cor, papa, 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. Sismundi has very wittily remarked that the Portuguese was created to be a bastard (a baseless Castilian). 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 resemble in intonation and accent. The best Portuguese grammar is that of Pedro José de Figueiredo ('A Arte da Grammatica Portuguese,' Lisbon, 1799); and the best dictionary the revised edition of Bluteau, whose Antonio do Val de Oliveira, Lisbon, 1759. In 1783 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.

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 to the lyric and pastoral poetry of two geniuses, Camilo de Mesquita and the princely Dona Luisa. In 1828 the poet gave to the world the brilliant romance of King Dinis, whose author is said to have been a minister in the early days of Alphonso I, who composed the first prose history of Portugal, entitled the 'Legends of Portugal.' The poetry of this period is less interesting than that of the Scanian and Castilian schools. The few poetic fragments however of these antique bardic songs which have been preserved by Faria e Sousa ('Europa Portugueza,' vol. iii., p. 378) are not wholly intelligible even to the natives of Portugal. As far as the reign of Alphonso I, in the twelfth century. In its early stages, the poetry of Portugal was not much less refined than that of any author. The language is not so far removed from the classical, and the poetry of the fourteenth and fifteenth centuries is as refined as that of any other country. The few poetic fragments however of these antique bardic songs which have been preserved by Faria e Sousa ('Europa Portugueza,' vol. iii., p. 378) are not wholly intelligible even to the natives of Portugal. As far as the reign of Alphonso I, in the twelfth century. In its early stages, the poetry of Portugal was not much less refined than that of any author. The language is not so far removed from the classical, and the poetry of the fourteenth and fifteenth centuries is as refined as that of any other country.
filled the whole nation; and the Portuguese poets sang in an heroic and romantic strain, of which the 'Cancioneros Generals' 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 Joaquin Jose Ferreira Gordo, comprising poems by a hundred and fifty writers of the fifteenth century, is known only by short account of it in the 'Memorias de la Litteratura Portugueza.' Another of Ribeiro, who flourished under Emmanuel the Great, and who is better known as the author of a romance in prose entitled 'Meninas e Moças' (Lisboa, 1559 and 1765, 6vto.), was the first to write elegies, which, with the exceptions of Joao Teixeira e Portocarrero and Joao de Sua, the poet, his contemporary, may in every respect claim superiority. This direction of taste gave rise to the numerous pastoral poets of Portugal during the fifteenth century. The poet, a knight of the order of Christ, and governor of Madeira, was the author of a long elegy of 900 verses, which was printed as an appendix to the works of Ribeiro. Several eminent poets imitated his example; and Portugal has not been less regarded as a native land of romantic pastoral poetry, which the Portuguese poet Jorge de Montemayor afterwards introduced into the literature of Spain. It is a remarkable fact that several of the poets of that age composed their elegies differently in the Portuguese and Castilian languages, but used the latter in preference, if they wished to treat modern subjects. Sao de Miranda, who flourished towards the middle of the sixteenth century, and is the author of several elegies and pastoral romances, wrote two comedies and several epistles in imitation of those of Horace, is considered to be the introducer of the Italian style of poetry into Portugal, where it was quietly adopted, and without exciting the violent literary storm raised in Spain against its propagators. He was also the founder of a classical school, which was not without admirers and imitators. In this number may be enumerated Antonio Ferreira, whom the Portuguese of that age have ever been looking to his having successfully imitated that author's epistles, and whose works were reprinted in 1772 at Lisbon; Jeronimo Cortereal, the author of an epic poem entitled 'La Batalla de Lepanto,' and several other works in Spanish, Diego Bernadile, who wrote elegies, epistles, and numerous sonnets; and, lastly, Pedro de Anrade Caminha, whose long-lost works were discovered and printed at the expense of the Royal Academy of Lisbon in 1851, 8vto. The most celebrated however of all the Portuguese poets is Luys de Camoens, whose poem 'Os Lusiadas' is sufficiently known, and has been translated into almost every language of Europe. There are no less than three English versions of it; and the most admired is that of Robert Harwood Fashaw (Lond., 1655, fol.); next comes that of William Julius Mickle, which appeared at Oxford in 1776, 4to.; and lastly that of Thomas Moore Musgrave, 1825, 8vo. So much for the deeds of Camoens, which formed his life in an hospital in the year 1579, the learned Rodrigo Lobo Surupita published the first collection of his hitherto scattered poems. Manoel de Faria e Sousa afterwards published a learned Spanish commentary on the works of the Portuguese poet, Lisbon, 1825-9, 4to. A very handsome edition was lately printed by Jose Maria de Sousa Botelho, and printed at Paris by Firmin Didot, 1817, 4to. Jorge Ferreira de Vasconcelos distinguished himself by the composition of comedies. He was the author of a new 'Romances of the Round Table.' Estevam Rodrigues de Castro, a poet, and at the same time a learned physician, wrote sonnets, odes, and elegies with great success. Ferreira de Surupita, the pupil of Camoens, compiled the miscellaneous poems of Camoens (Lisbon, 1895), likewise belongs to this age. Besides his judicial works, he was the author of various humorous pieces in verse. About this time an interest began to have and the education of the Portuguese nobility. The learned statesman Miguel Cedado de Vasconcelos, who resided for several years in France, was particularly distinguished as a writer of comedies. His 'Corte na Aldeia, ou 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 characterize the Tuscanian and Academic Discourses, in which friends discourse concerning the proper education of an accomplished man of the world. This production, which must be considered as the first Portuguese classical prose work, did not prevent the author from cultivating poetry, and his minor romances are the most luxuriant blossoms of this old branch of Portuguese literature. In this century also, the voyages of discovery of the Portuguese gave birth to an abundance of abundant literary materials. Of this kind are the 'Perigrinaçam' (Travels), by Fernan Mendes Pinto (Lisboa, 1620, fol.), which were translated into almost every European language; the 'Histoire de l'Empire de Tangeria' by Meneses; and the accounts of the missions to Abyssinia and Ethiopia, by Almeida, Alvaras, and others. Romances and books of chivalry are another branch of literature which the Portuguese diligently cultivated during the sixteenth century. The former are imitated from the Spaniards, to whose language—the Castilian—this kind of composition seems to be essentially attached; but they claim, without reason, the priority in the second. 'Amadís de Gaul,' Cervantes spares in his judgment on romances of chivalry, was written by Francisco de Maraes; and there is every reason to believe that 'Amadis,' in its original form, is also of Spanish derivation. The romances in this sort are, 'As Ribeiras de Mondego,' by Sao Sotomayor, 'A Constante Florinda,' by Gaspar Pires de Rebelo, the author of some short didactic novels, and many others which are mentioned by Barbara Machado and other bibliographers. At no period did historical composition in Portugal attain the elevation which it reached in Spain; the ancient chronicles are fewer, and not so well written; there is little or no local history, and as to general narrations recording 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 subject of the first historical works 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 beginning of the sixteenth century, and died in the year 1570, at the age of seventy-four. Having been appointed by King John III. to the post of treasurer to the Indian department, he devoted his whole life to the collection of materials for his great historical work, which he divided into Decades, and published under the following title, 'Asia de Joao de Barros, dos feitos que os Portuguezes fizeram no descobrimento e conquista do Indias.' This work was published in 1569 and 1570. Barros left only three decades, but Diego do Couto, who succeeded him in his office, wrote the seven remaining, five of which were printed at Lisbon, and two, still inedited, are preserved in manuscript in the library of the British Museum. A contemporary of Barros was the learned Dom Francisco de Castanheira, the author of another history of the discovery and conquest of India by the Portuguese, the first edition of which appeared at Coimbra in 1559-61. 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 Gois, is more valuable for the facts which it contains than for the style. The life of the great Affonso, king of Portugal, was the subject of another work, that was esteemed by the Portuguese. The language is pure, but the style, which is that of the old chronicles, is monotonous and very diffuse. Bernardo de Brito, a monk who lived and flourished at the end of the sixteenth century, 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 Alcoberba, and began his arduous task, but he died in 1617, in the forty-seventh year of his age, without having accomplished the object to which he honourably aspire. The two volumes of this work entitled 'Reges Legendas Lusitaniae,' contain the annals of Portugal, from the mythical times of the anterioir of Portugal, to the death of King Afonso, that is, at the convent of Alcoberba, in 1597, the second edition, in 1649. Brito was likewise the author of a smaller historical work entitled 'Elogios dos Reys de Portugal.' Much that is really valuable for the early history of Portugal may be gathered from the collection entitled 'Espanha sagrada,' Mad., 1754-1801.
by Fáthor Enrique Flores, who published the "Clonico Lus-
itarianum" and "Clonico Combiníomeum." The other histo-
rians of Portugal who ought to be consulted are, La Cédile,
' Histoire Générale de Portugal,' Paris, 1733, 2 vols. 4to;-
Brandão, ' Monarchia Lusitana,' Lisbon, 1673-72; Lemos,
'Historia Temporum Rerum Lusitanorum,' Lisbon, 1768-
1804, 20 vols. 8vo.; Vasconcelos, 'Ancepsaamachia
Actorum Regum Lusitaniae,' Antwerp, 1621; and lately,
the 'History of Spain and Portugal,' in Dr. Lardner's 'Cabi-
net Cyclopedia.'

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 comed-
ian of the Castilian dramatists that he has been called by
their own country the author of the invention. Gil Vicente
was really the father of the Portuguese theatre, and his plays,
though no longer acted, are still read by people of taste.
The edition of his works which his son published soon after
his death, contains, in addition to sixteen autos, or spiritual
dramas, three tragi-comedies, some farsas, and a few dra-
matized novels, which are called comedias. In all these pro-
ductions Gil Vicente exhibits much dramatic invention
and a true poetic genius. It is said of Erasmus that he
learned Portuguese for the express purpose of reading Gil
Vicente's plays in the original, but though Gil Vicente is
undoubtedly it is said that his historical works tended to
commence until the time of Saa de Mi-
rranda, the first dramatic author who composed dramas simi-
lar to the Spanish. His two chief productions however,
'Os Estrangeiros' (the foreigners), and 'Os Viliaphansos'
(seekers of coveyants) a brief mention of his first important
work, the name of Viliaphanso), are dramas in the style of Plautus
and Terence, of whom he avowed himself an imitator.
Ferreira, who lived after Saa de Miranda, not only followed
in his steps, but laboured, though ineffectually, to introduce
into the dramatic poetry of Portugal a classical style. His
tragedy of 'Inês de Castro,' though deficient in true pathos,
contains many beautiful passages. His two comedies,
'the Emperor' and 'Midas' (Diomede), and 'Diomedes,'
resemble in spirit and form those of Saa de Miranda. Three
dramas by Camoens, 'El Rey Seleuco,' 'Os Amphitryones,'
and 'Filodemo,' are more remarkable for beauty of style than for invention. Dramatic invention and composition long waved amidst heterogeneous forms,
until the Portuguese poets, who wished to write for the
theatre, had no alternative but to become the imitators of
Lope and the dramatic authors of his age, and to renounce
even the popular poetical form which fact took
place. During the seventeenth and eighteenth centuries
the Portuguese stage was inundated with translations of
Spanish dramas, and all hopes were lost of re-establishing
the Portuguese drama.

With the sixteenth century the brilliant period of Portu-
guese literature passed away, and the connection with Spain
and the influence produced at the beginning of the seven-
ten century by the fantastic school of the Gongoristas
[Gregoriana] almost entirely naturalised Spanish literature in
Portugal. Thus the names of Manoel Faria e Sousa, who
died in 1649, and was the author of many works in verse
and prose; of Jacinto Cordeiro, a dramatic writer of some
eminence; of Barboza Bacellar, the author of several poeti-

cal works printed at Lisbon in 1716; of Manoel Severim
Faria, who wrote some political essays, and many more
eminent authors, belong to the history of Spanish rather
than Portuguese literature. They glorified 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 seven-
ten and the greater part of the eighteenth century
the same condition as the Spanish. Though the Academia
Real das Ciências de Lisbon, founded by king José
Emmanuel in 1714, did much towards rousing the nation from its
loverty, and directing attention to the important subject of
literature; at the time of Portugal, who himself was a
great friend to scientific pursuits, that Portuguese
literature revived and acquired a national tone. Francisco
Xavier do Menezes, Conde de Braganca, the first president of
the Academy, in its constitution, claimed that 'Arte Po-
tique' into Portuguese octaves, and published, among other
works, an epic poem entitled 'La Henriquez,' on
the foundation of the Portuguese monarchy by Henry of
Burgundy, in which he embellished as far as possible to fulfil
all the conditions of poetic art according to the principles of
the French critics. This poem was printed for the first

The Odes of Horace were elegantly translated into Por-
tuguese verse by Joaquim José da Costa e Silva (Lisbon,
1778); the 'Satires' of Sulpitio, by Antonio Luís de Azevedo
(Lisbons, 1786); Ovid's 'Heroides,' by Miguel de Couto
Guerra (Lisbon, 1778); and the 'Comedias of Terence, by
Leonol da Costa (Lisbon, 1788). For the Italian
conceits must also be named among the Portuguese poets
who at the close of the eighteenth century corrected the
national taste and subjected it to classical rules. The col-
temporary authors among the modern poets of Portugal
contains two hundred and forty-five sonnets, which are greatly
admired. Dafna Catharina de Sousa wrote a tragedy called
'Osmia,' which was crowned by the Academia. The sub-
ject is chosen from Shakespeare's "Othello" and although when acted upon the Lisbon stage it did not meet with a favourable reception, Portuguese critics look
upon 'Osmia as the best tragedy in their language. The
name of Francisco de Roldan y de la Puente y de la
Alvarez de Nobrega, Xavier de Matos, Valladares, and
Nicola Tolentino, occupy a prominent place among the
modern poets of Portugal. Francisco Manoel, who was
born in 1754, and was long held in the dungeons of the
Inquisition, published, in 1806, at Paris, a volume of six
poems. José Basilio de Gama wrote a poem on the con-
quest of Paraguay, which is very much esteemed. Manoel
Maria de Barboza du Boisage is also counted among the
modern poets of Portugal, who has had translated into Portuguese a text of Winckelmann's 'Oberon.' Araujo de Azevedo, a distinguished statesman, is the author of several excellent translations such as Dryden's 'Alexander's Feast, some of Gray's "Odes,' and the 'Elements of a Grammar and Dictionary of the
Portuguese language.' Joseph de Sousa de Roza and Mafinino d'Albuquerque are also esteemed good poets. Prose-writing however was far from keeping pace with these poetic effusions. With the ex-
ception of Barbosa Machado's "Biographical Dictionary
of Portuguese Authors," written in imitation of Nicolás Anto-
nio's 'Bibliotheca Nova et Vetus,' which is a valuable
work, scarcely an historical or literary composition appeared in
Portugal in the eighteenth century. A few years since,
under the title of 'Poesias,' dedicated to the Countess of
Oyenhausen. This lady, a daughter of the Marquis of
Alençon, is a poetess who has made a name for herself in
Wieland's 'Oberon.' Araujo de Azevedo, a distinguished statesman, is the author of several excellent translations such as Dryden's 'Alexander's Feast, some of Gray's "Odes,' and the 'Elements of a Grammar and Dictionary of the
Portuguese language.' Joseph de Sousa de Roza and Mafinino d'Albuquerque are also esteemed good poets. Prose-writing however was far from keeping pace with these poetic effusions. With the ex-
ception of Barbosa Machado's "Biographical Dictionary
of Portuguese Authors," written in imitation of Nicolás Anto-
nio's 'Bibliotheca Nova et Vetus,' which is a valuable
work, scarcely an historical or literary composition appeared in
Portugal in the eighteenth century. A few years since,
work, which comprises also the history of Spanish literature, was translated into English by Miss Ross (Lond., 1823, 8vo.). But Bouterwek's work, in the opinion of critics, is far from being either complete or accurate. Sissunuti, in his 'Literature du Midi de l'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 Viterbo to his 'Eloquêncio das Palavras', Terceira e Quarze, que em Portugal antigamente se usavam', &c., Lisbon, 1798, 2 vols. 8vo.

Those who wish to get an insight into Portuguese literature may consult Barbosa Machado, Bibliotheca Lusitana, Lisbon, 1741-59, 4 vols. fol.; Faria e Sousa, Europa Portugueza, Lisbon, 1678-80, 3 vols. fol.; Velaquez, Origines de la Poesia Castellana, Malaga, 1754, 4to., and Díaz's Remarks upon that work; Sarmiento, Obras Pathologicas, Madrid, 1775, 4to., but above all, the Memorias de Literatura, published by the Royal Academy of Sciences in Lisbon, 1792-1836, 4to., and the Catálogo dos Livros, que se fizer de ler para a Continuação do Dicionário da Lingua Portugueza, a work which appeared in 1792 by order of the same Academy.

PORTULACÆA, a small natural order of polyetalous 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-seed, but the edges of the carpels are sometimes so much indented as to press upon the placenta and divide the interior into cells. They are annual, perennial, half-shrubby or shrubby plants, with entire or 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 Brachiuran Crustacea.

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-feet 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 pincers rather long. Fifth pair of feet terminated by a flattened foliaceous and nearly lancet-like 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. Portunus variatus. Locality.—The Adriatic Sea, the Mediterranean, and the ocean.

Portunus variatus, male.

The species above figured appears to be identical with Polyopneustes latipes of Milne Edwards; nor does there appear to be any sufficient reason for distinguishing the form generally from Polyopheustes. [PORTUNUS.]

PORTUlA. M. Milne Edwards makes the Portunus the second tribe of the family of Cyclometopidae, observing that it nearly corresponds to the genus Portunus, as it was established by Fabricius, and comprehends the greater part of the crustaceans which Lacépède arranged in his division of Brachyura. nageus (Swimming Brachyura). M. Milne Edwards is of opinion that the closest analogy unites these animals to the Cancerinae, 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 Portunians, says M. Milne Edwards in continuation, does not ordinarily differ much from that of the greater part of the Cancerinae, but the carapace is always but little elevated, and sometimes has a lozenge-shape. The orbits are directed upwards and forwards. The internal antennæ are bent back transversely, or at least very obliquely outwards, and the basilar joint of the external antennæ is partially lodged in a gap of the internal orbital angle. The third joint of the external jaw-feet 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.

Orbita, antennae, jaw-foot, &c., of Portunus.

The sternal plastron is always very wide, and in general the last thoracic segment is much more developed than all the others, even that which carries the anterior feet; the suture which separates this segment from the preceding is directed very obliquely forwards and inwards; the vault of the sides is generally nearly horizontal, and the
posterior sella Turcica very narrow. The anterior feet are in general very elongated, the succeeding feet are sometimes matutary, and the posterior feet always so, their tarsus being lamellate; the second pair of feet are ordinarily more than once a half as long as the carapace.

Habits of the Tarsus.—Excrustation of the carapace in this group are for the most part essentially swimmers, and live often out at sea. They are vulgarly called "Paddlers." The following genera are arranged under the tribe by M. Milne Edwards.

Carcinus. (Leach.)

Generic Character.—Carapace elongated, approachinng 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 denticulated, 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 foot advanced, fronttal, 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 inner angle lodges the base of the external antenna. The first joint of which is narrow and cylindrical, and reaches to the front; their movable stem is very long and inserted in the orbital gap. The internal antennae are bent back in their nearly circular fossae obliquely outwards. The buccal frame is a little wider backwards than it is in front, and the third joint of the jaw front, and of 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 styleform. The abdomen of the male is only composed of five segments. (M. E.)

Example, Carcinus Menaus, Cancer Menae of authors. Carbe engrave 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.

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, a great many are brought to Paris. Colour, dirty green; red when boiled.

Platyonychus. (Latre.)

Generic Character.—Carapace narrower and more regularly convex than that of the other Portunidae, much longer than it is wide, and sometimes circular. Front very narrow and denticulated. Latero-anterior borders a little curved and directed backwards, and, like those of the Carcinus, the Pulitzi, and the greater portion of the Portunus, divided into five teeth. Orbits not deep, and directed forwards. Interna1 antennae bent back obliquely forwards, with their fossae very imperfectly separated from the orbits. Disposition of the external antenna different from that in the Carcinus, the Portunus, the Thalamita, and the Lapiger; their first joint, which is very small, is not soldered to the front, but is moveable, like the succeeding ones, and is inserted between the lower orbital border and the antennary fossae. The external jaw-feet present 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 fossae. 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 moderate 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 long, and have the tarsus flattened, a little enlarged, and nearly a lanceolate form; the tarsus of the succeeding feet is also a little flattened, but rather styleform than lamellate; the fifth pair completely matutary. (M. E.)

M. Milne Edwards divides the genus into the following sections and subsections:

3. 2

Species having the front 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 lanceolate form.

Example, Platyonychus laevis (Cancer laevis, Penn.; Portunus caricas, Leach (Mola); Platyonychus devonensis, Latt.; Length about an inch. Locality—Coasts of England and France. [Portunus]

b. a. Carpus of the posterior feet oval and obtuse at the end.

Example, Platyonychus occidentalis (Cancer occidentalis, Herbst; Portunus pexus, Say; Platyonychus occidentalis, Latt.). Length about two inches.

Species having the frontal teeth equal, and consequently not one on the median line, and two fissures at the superior orbital border.

Example, Platyonychus bipustulatus. Length from two to five inches. Locality—Indian Ocean.

Platyonychus bipustulatus.

Polybus Haecowii.

Species having the front advanced in form of a triangular muzzle and simply undulated on its borders.

Example, Polybus nausus (Portunus biguttatus, Risso, Cruitt. Nis.) very small. Locality—the coasts of the Mediterranean.

Polybus. (Leach.)

Generic Character.—Very nearly allied to Platyonychus, from which it hardly differs, except in the form of the feet, which are all matutary; 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, but 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 to the me-
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-oral 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 basillary 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 moveable 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 born 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 pilastron 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, armed with the spines described as Lapp. The carpus 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 the basillary joint of the external antennae of the carapace to the front, and there it is, that 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 restricted, establishes the passage between the Carcinii on one side and the Lusatiae on the other. (M. E.)

Habits, Locality, &c.—The Portunii, though essentially aquatic and swimming with much ease, are not met with far out at sea, but keep near the coast, the Lusatiae. Their haunts are near the shore, and at spring-tides they are often found during the day hidden under stones, in the small pools of water left by the sea. Some species inhabit still greater depths, on oyster-beds, &c., and are never seen to run, like the Carcinii, 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, Portunusuber (Canceruber, Linn. ; Cancer

Portunusuber.

velutinus, Penn.). Length about two inches and a half.

Locality.—The coasts of England and France. This is the Crabé à laine, CrabéEspagnol, &c., of the French.

a. Front armed with three or five teeth.
   a*. Carapace wrinkled, squamulose, rather granulous, and covered with hair.

Example, Portunus plicatus (Cancer Deprapor, var. Penn.; Portunus Deprapor, Leach; Portunus lividus [var.], Leach, Marine brown, total length about two and a half inches. Colour reddish. Locality—Costs of England and France.

a**. Carapace nearly united, and without hairs.

Example, Portunus marmoreus (Cancer Deprapor, Penn.). Locality—Costs of England and France. The last joint of the posterior legs in this species terminates in a point.

b. Species having the front entirely or divided only into rounded lobes.

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—Costs of England and France; very common in the Mediterranean.

b*. Front entire, or divided only into two symmetrical lobes.

bb. Latero-anterior borders of the carapace armed with four teeth only.


Lupae. (Luech.)

Generic Character.—The anterior part of the Lupae 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 lateral joint of the orbital angle of the orbit; the latero-anterior 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 spines the last is in general much greater than all the others, and is directed straight outwards, 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 carapace, a large notch, which the basillary joint of the external antennae fills; at the upper border of these cavitons are two fissures. The fossae which lodge the internal antennae are closed over by the carapace, the vertical lamina 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 external antennae, where inserted, is sufficiently short to be bent back there entirely. The basillary joint of the external antennae is soldered to the inner border of the superior and external angle of the front; it is not wide, and gives insertion, by the extremity of its internal border, to the moveable stem formed by the succeeding joints, so that this stem, the length of which is considerable, would seem to spring from the inner carapace of the eye, and nothing prevents its being bent backward outwards 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 inwards. The sternal pilastron is nearly always tolerably convex longitudinally, very wide, and hardly closed (reserre) 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 fingers 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, spiniform, and in general quite calculated; sometimes it is flattened, lamellare, 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 of feet are very long, and enduate, by the weight of their last two joints, powerful oars; their third joint (or thigh) is in general stout, but very short, and pre-
sents 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 rest than the floating flux. 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, *Lupae Turquatarica* (*Cancer olivaceus*, Herbst; *Cancer serratus* v. Forsk.; *Portunus serratus*, Rüpp.; *Portunus Turquatarica*, 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, 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.

* Upper border of the orbit armed with a spine.


b. Upper border of the orbit without any spiniform prolongation.

Example, *Lupae sanguinolenta* (*Cancer sanguinolentus*, Herbst; *Cancer pelagicus*, var. and *Portunus sanguinolentus*, Fab.). Length about three inches. Carapace with three large bright red spots on the back part of the carapace. *Locality*—The Indian Ocean.

a**. Median teeth of the front small, but projecting.


Lupae polylepis.

B. Species having the last spine of the latero-anterior border of the carapace scarcely longer than the others.

Example, *Lupae spinimana* (*Portunus pelagicus* and *Portunus spinimanus*, Latr.). Length from three to four inches. *Locality*—Coasts of Brazil.

b. External border of the arm without spines.


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.


a*. Teeth of the latero-anterior borders of the carapace resembling each other.


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, *Lupae Sebidae* (*Cancer martinius sanguinolentus*, Soba, Maz. iii., p. 20, f. 9, copied by Latreille, in *Erevul.*, p. 272, f. 5, under the name of *Portunus sanguinolentus*). Size about the same as *L. granulata*. *Locality*—Coasts of Brazil. (M. E.)

bb. Median teeth of the front less projecting than the others.

b**. Hands large, of the ordinary form, and shorter than the transversal diameter of the carapace.


bb*. Hands filiform and of great length, being nearly once and half the transversal diameter of the carapace.


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
Thalamita Chaptalii.

b. Species whose front is armed with deeply cut and flattened teeth.


Second Subgenus. (Hexagonal Thalamites.)
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 foot armed with spines, but without elevated granulations.

Example, *Thalamita cruciferata* (Portunus cruciferus, Fehr. 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 Cruciferata.

a*. Anterior foot presenting between the spines with which they are armed, a great number of tubercles or elevated granulations.


Thalamita Natator.

c. Last lateral tooth stouter and much more projecting than the others.

---

Lopes Forcorps.

Orbit, a disposition which is never observable in the *Lopes*.
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 basiary 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 *Portuni*. The sternum 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 *Portuni* and *Platynogonchi*; 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, styloform. 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 *Portuni* or the *Platynogonchi*, and is extremely rare in the *Lopes*; 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 Thalamites.

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.

Quadrilateral Thalamites.

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.

Example. Thalamita 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 rudimentary.

Example, Thalamita erythroductyla (Portunus erythroductyla, Linn.). Length 24 inches. Locality—Australia.

Podophthalmus. (Linn.)

M. Milne Edwards justly observes, that of all the Portunians the Podophthalmus have the most remarkable aspect, 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.

Eyes, orbit, jaw-foot, &c. of Podophthalmus.

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 angle of these ocular cavities separates 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 Crangonidæ, 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 antennæ are situated below the origin of the eyes, a disposition which is met with in no other Portunian, and their stem cannot bend itself back into the cavity where they are lodged. The external antennæ are also below the eyes; they are placed between the antennary fossæ and the orbits, at the external side of the first, and their basal joint is soldered 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 antennæ is formed of two small peduncular joints and of a slender and rather short multiarcticate filament. The buccal frame is extremely wide, and is only separated from the antennary fossæ 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 truncated forwards and inwards, that its form has been compared to a hatchet, the extremity of whose trenchant edge gives insertion to the succeeding joints, which are very large. The first pair of feet are large, and terminate by a nearly straight hand; when they are bent they reach much beyond the borders of the carapace. The second and third pairs are much less than the anterior pair, and the third pair are longer than the others. The joint which terminates the second, third, and fourth pairs is styliform and a little flattened. The remaining five pairs are very wide and in the form of nataatory oars. The abdomen presents nothing remarkable in the females; but in the males it is triangular, and composed of five moveable pieces only. (M. E.)

Example, Podophthalmus vigil (Portunus vigil, Fabr. Podophthalmus carapace of the work last quoted appears. M. Milne Edwards observes, to differ principally from Podophthalmus vigil 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 negative character does not really exist.

PORTUS, FRANCIS, a celebrated philologist, 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 Greek literature and philosophy. He is remembered by 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 inconsistent 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, and then went to Ferrara, and undertook the education of the sons of the Dutchess Renée of France. In this capacity he also carried on her 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 Filarete. After the death of her husband, the dutchess 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 (1562). Here he spent the remaining years of his life, partly in fulfilling 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 on the 5th of January, 1578.

Portus has written explanatory and critical commentaries on various antient authors, such as Aristotle ("Rhetoric"), Aeschylus, Hermodgenes, Longinus, Pindar, on the "Greek Anthology," some works of Xenophon, and of Theophrastus, others. He translated from the treatise of Apollonius of Alexandria, "De Syntaxe, seu Correctione Orattonis," the "Psalms," the hymns and letters of Sinesius, and the odes of Gregory Nazianzenus. 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 Esti, 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 antient languages and literature. After the death of his father he left Geneva, and in that year (1581) he was made professor of Greek at Laosanne, where he remained for ten years, devoting his leisure hours to preparing new editions of antient 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, Stibilius, and some of his own, Geneva, 1607; Aristophanes, Geneva, 1607; Aristophanes, Rostock, 1597; Rhetorica in Porti, made by Aemilius, the Commentary by his father). Spira, 1598; Homer's Iliad, Xerophanes, and Thucydides. He
translated into Latin the work of Proclus, 'De Theologia Platonis,' published at Hamburg in 1618; the Lexicon of Suidas, Colonii Allobrogiarum, 1619; a reprint appeared at Geneva in 1630. He also translated Theucidides and the 'Roman Antiquities' of Dionysius of Halicarnassus. The following are the original works of Aemilius Portus: 'Oratio de variarum Linguarum usu, necessitate, præstantiqœ,' Casell, 1611, 4to; 'Dictionarium Ionicum Graeco-Latinum, quæ indiquat in omnes Herodotis libros continuos,' Portus, 1620; a reprint of it appeared at Oxford in 1699. 'Dictionarium Doctrinæ Graeco-Latinum, quæ Theorici, Moschii, Bionis, et Simmæ variorum opusculorum interpretationem contineât,' Frankfort, 1664; 'Pinarium Lexicographicum, portus, quæ in peccatum publicum et etiam verba phrasique non vulgaris in aliis lexis omisse declarantur,' Hanau, 1694; 'De prisco Graecorum Computatione,' Heidelberg, 1694; 'De Nihili Antiquitate et multiplo Potestate,' Casell, 1690.

PORUS (Porous), 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 Lassen (Pentapologia Indica, p. 17, 18) with more probability connects it with Pura, or descendants of Pura, which we know, from the ancient writers, was the first introduction of the Hindu name to several Indian dynasties. 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 Acesines, and the other over the country between the Acesines and Hydaspes (Heidelberg, p. 300). 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 (Heidelberg, p. 300). Porus however survived Alexander. He was treacherously killed by Eudamas, n. c. 317. (Diod. Sic., xiv. 14.)

Strabo mentions (xv. p. 686) that an Indian king of the name of Porus sent an embassy to Augustus.

PROCONSUL, a provincial title.

PROMETHEUS, a gorgon in Greek mythology.

POLEN, a province of the Russian monarch, was formerly a part of the kingdom of Poland. On the first partition of Poland in 1772, the part of Posen to the north of the Netza, and on the second partition in 1795, the remaining part of the kingdom of Prussia; this, together with the part of the kingdom 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, restored the original province of Posen to Prussia by the name of the grand-duchy of Posen. It lies between 51°16' and 53°32' N. lat, and between 15°1' and 17°15' W. 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. It is divided into the two governments of Bromberg and Posen.

POLE.—This province is perfectly level, except the banks of the Warthen in the circle of Oberschleiz, which are rather more elevated, and there is here and there a hill on the frontiers of Schlesien. The soil is partly marsh, which is very fertile, and partly sandy, but here and there the sand is mixed with more solid elements, especially loam, so that the soil may be considered as tolerably good. The most fertile parts are the country on both sides of the Warthen, and the Notzbruch, a low tract on the river Netze, about 90 miles in length, and not above 3 in breadth, which, having been completely sown by dikes by Frederick II., is now converted into fine corn-land and meadows, with fine villages. The villages under the government, there were only unprofitable bogs and thicketts. The river Warthe, which traverses the province in its whole breadth, and the Netze, are navigable. The Netze is connected by a canal with the Oder, 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 rivers that are there joined to several other rivers, so that the province is very well watered. The Bromberg 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 Goppio lake. The air is pure and healthy.

Natural Productions.—The chief productions are corn of all kinds, potatoes, sugar, beet, 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 use is made. See agriculture. The state of agriculture has been gradually established. The common people, says Dieterici, "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 cultivation of Posen, the organization of the public schools, and the regulation 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, hogs' bristles, and feathers. The principal imports consist of oil, copper, iron, and other manufactures. The Dutch, who export raw silk from their factories in Silesia, have been driven from Silesia in consequence of religious persecution, and found several towns on the frontier, such as Rawitsch, Frausisdt, Bojanows, Lissa, Kosche, and Meseritz. These towns and several other manufactures cloth of such good quality as to make it difficult to distinguish it from the English and Dutch. Formerly considerable quantities of these cloths went 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 1813, to 1,169,766 inhabitants, of whom the great majority are Roman Catholics, 250,000 Protestants, and 70,000 Jews. The Roman Catholics are the majority of the state of 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 (Brömberg; Posen) of the two governments are:—1. In the government of Bromberg, Gnezen, an old ill-built town, with 6000 habitants, of whom 1900 are Jews; it is the see of a Roman Catholic archbishop, formerly the primate of Poland. 2. In the government of Posen, Gorka, a small town of the same name, primate of Poland, and the Roman Catholic churches, two monks' convents, one nuns' convent, and a seminary for Roman Catholic clergy. The inhabitants manufacture some woolen cloth and linen, and there are several distilleries of brandy, and saltpetre works. It is bounded on the north by a fertile plain, has 1600 habitants, of whom 2000 are Jews, who have considerable distilleries of brandy, breweries, and saltpetre works. There are five Roman Catholic churches, five Franciscan convents, and a monastery. Schönlanke, a well-built town, with 4000 habitants, who have a considerable manufacture of woolen cloths. 2. In the government of Posen, Lissa, or Polish Lissa, has 8657 habitants, of whom 3470 are Jews. This is one of the chief manufacturing towns in the province, and has a palace, a handsome market-place, a gymnasium, four Roman Catholic churches and one Lutheran church, a large synagogue, and extensive manufactories of woolen cloth, linen, silk, and other manufactures. The town is situated on the river Obra, 4500 inhabitants, chiefly Germans, of whom 1150 are Jews. The manufacture of woollen cloths is carried on here, and is very considerable. Krotochin has 6337 habitants, of whom 2213 are Jews. They have manufactories of woolen cloths, linen, tobacco, and suetery. There are also tanneries, dyeing-works, and a distillery. There is a Lutheran and a Roman Catholic church, and a synagogue, both in Lissa.
POSEN. This government is situated between 51° 10' and 22° 50' N. lat., and between 15° 7' and 18° 23' E. long. It is built on the banks of the Posen, a considerable trade in corn, cattle, wool, &c. Kemen, on the Silesian frontier, has 6154 inhabitants, of whom 3474 are Jews, who carry on a considerable trade in horses and goods with Silesia. They have manufactures of cloth, linen, tobacco, and soap.

POSONIUS (Ποσόνιος), a Greek philosopher, was a native of Apamea in Syria, but a citizen of Rhodes, where he died. He is residually said to have lived 67 years (Plut., viv. p. 653, Athen., vi. p. 252. c.) The dates of his birth and death are unknown; but he must have been born during the latter half of the second century before the Christian era, as he was a disciple of Panetius, who probably died A.D. 180, and was attached as an instructor to the school of the Stoics, which is the date of the consilium of Marcus Marcellus (Suidas, Posidon), B.C. 51, and probably died soon after. He lived, according to Lucian (Macrobr., c. 29), to the age of eighty-four. (Pomp., c. 42; Plut., Hiat. Nat., v. 30.)

Posidonius was one of the most celebrated philosophers of his day. Cicero, who had received instruction from him (Cic. De Rato, c. 3; De Nat. Doctr., i. 3; De Plin., i. 2), frequently refers to him in his works. His philosophy appears to have had a very high opinion of him, as we read of his visiting him at Rhodes shortly before the war against the pirates, n.c. 67 (Strabo, xi., p. 492), and again in n.c. 62, after the termination of the Mithridatic war. (Plut., Pompey, c. 42; Plut., Hiat. Nat., vii. 30.)

Posidonius appears to have been a man of very extensive information. Besides his philosophical treatises, he wrote works on geography, history, and astronomy; but none of these are extant, with the exception of a few titles, and a few sentences, quoted by Cicero, Diogenes Laertius, Strabo, and others. He seems to have travelled in different parts of the world for the purpose of collecting information. He was a contemporary of Pliny the Elder (n.c. 614; iii. p. 165; iv. p. 197), that he had been in Spain, Liguria, and Gaul. Plutarch was also indebted to Posidonius, among others, for the materials of several of his lives. This is the case in his lives of Ennius, the Greek, and others; but particularly in the life of Marius, with whom Posidonius had been personally acquainted. (Plut., Marius, c. 45.) Posidonius wrote 'Meteorologica.' Cicero mentions (Nat. Deor., ii. 34) his artificial sphere, which represented the motions of the heavens.

Posidonius was a much stricter Stoic than his master Panetius. (Panetius) He maintained that pain was not an evil, as we learn from an anecdote which Pompey frequently related respecting his visit to the philosopher at Rhodes. (Cic. Tusc. Disp., ii. 25.) His works on Divination and the Nature of the Gods are referred to by Cicero, who probably made use of them in his works on the same subject. (Cic. De Div., ii. 3, 30, 64; De Nat. Doctr., i. 3, 4.) Strabo says (xii. 492) that Posidonius wrote an account of the wars of Pompey, but did not pay much attention to accuracy. This account was however probably contained in his historical work, of which Athenaeus quotes (iv., p. 186 d) the name. It is doubtful whether it is the same book as the work quoted by Pliny and others.

For further information respecting the opinions and writings of Posidonius, see 'Posidoni Disquisitio Doctrin.' Collet, atque illustravit Janus Bake. Accedit D. Wittenbach (Adnotat.); 1819. (POLENO.)

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.

POSTLIPO, the name of a long hill which forms the boundary of the town and immediate territory of Naples towards the west, and divides it from the district of Pozzuoli. The hill consists of tufa, easily cut and excavated. It is connected on the north with the hill of Sant'Elmo, which commands Naples, and is a continuation of the hill of Posillipo. The hill of Posillipo runs in a south-south-west direction close to the sea-shore for about three miles, terminating in a long cape facing the small island of Nisita. The side of the hill towards Naples is covered with country-houses and gardens, which enjoy a delightful prospect of the city and bay, and the road along the base of the hill runs as a new carriage-road to Pozzuoli. The old road from Naples to Pozzuoli passes through a tunnel three-quarters of a mile in length, which perforates the hill in the direction of its breadth, and is called Grotta di Posillipo, and also Grotta di Pozzuoli. This tunnel appears to have been in use at the time of the Romans, but was enlarged by the Spanish viceroys of Naples. It is described by Strabo (p. 246. Casaub.) as wide enough to allow two carriages to pass, and as lighted with candles. Maitland (Antiquities of Naples, i. 51) mentions Pusilipianum as the name of a villa near Naples.

Vol. XVIII.—3 M
POSSE COMITATUS (literally, the power of a county) comprises all able-bodied males within the county between the ages of 15 and 70 years. All such persons, with out any exception, are bound to aid the sheriff in all matters that relate to his office; and he is punishable if he neglects or refuses to perform their duties, or aids in the suppression of any insurrection, 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 them. They may be summoned to serve, and are liable to be punished for killing a person 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, is in the executive officer, and, when even for a private person, to raise a competent number of people for the purpose of opposing and suppressing enemies, rebels, rioters, &c., within the county. But all such persons are punishable if they use unnecessary violence or create false alarms. It is also the duty of the sheriff or any minister of the king having the execution of the king's writs, or process even in a civil nature, who meets with actual resistance in his attempt to execute them, to raise a sufficient force to quell the resistance. (2 Inst., 193, 194; 3 Inst., 161; 1 Hawk., P. C., 152, 156.)

POSSESSION. In endeavouring to explain the legal meaning of this term, we shall commence with the following remarks on 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 understand that condition by virtue 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 include all other persons from using it; so detention is the exercise 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.

In accordance with the law, 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, according to private law, it is the rights of possession (jus possessio) that we have to consider, and not the right to possess (called by modern jurists jus possessorii), which belongs to the theory of property.

We now pass from the notion of mere detention to that of jurisdictional 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 consistent 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 of property is suspended.

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; secondly, we must enumerate the rights which the Roman law recognises as a consequence of possession, and we must also examine the rights which are improperly considered rights of possession. It will then be easy to arrive at themselves conclusions regarding the notion of possession. The first and simplest mode in which possession appears in a system of jurisprudence consists in the owner having the right to possess; but we are here considering possession independent of ownership, and as the source of peculiar rights; the former of these two questions therefore may be expressed thus—in what sense has possession been distinguished from ownership? a mode of expression which has been used by many writers.

In the second place we must determine how the different senses in which possession occurs in the Roman law are distinguished from one another by the mode of expression; and particularly what were the significations of possession generally understood, natural, and possessive, among the Roman jurists.

In the whole system of Roman law there are only two consequences which can be ascribed to possession of itself, as distinct from all ownership, and these are usucapion and interdict.

The foundation of usucapion is the rule of the Twelve Tables, that he who possesses a thing one or two years becomes the owner. In this case bare possession, independent of all right, is the foundation of property, which possession must indeed have originated in a particular way, in order to have such effect; but still it is a bare fact, without any other right than what such effect gives to it. Accordingly it is possession itself, distinct from every other legal relation, on which usucapion, and consequently the acquisition of ownership, depends.

Possessorial interdicts are the second effect of possession, and their object to possession is this: possession of itself being no legal relation, the distinction which possesses a violation of a legal right, and it can only become so by the circumstance of its being at the same time a violation of a legal right. But if the disturbance of possession is effected by a legal right, such a disturbance is illegal act is illegal, and such illegal act is the very thing which it is the object of an interdict to remedy. All possessorial interdicts then agree in this: they presuppose an act which in its form is illegal.

Now since possessorial interdicts are founded on such acts as in their form are illegal, it is clear why possession, independent of all regard to its own rightful, may be regarded as an effect of ownership. So, if the possession of a thing is illegal, as the possession of property, the possessor protects himself by means of the interdicts. Possession is the condition of these interdicts, and in this case, as in the case of usucapion, it is the condition of rights generally.

Most writers take quite a different view of the matter, and consider every violation of possession as a violation of a legal right, and possession consequently as a right of itself, namely, presumptive ownership, and possessorial rights as provisional vicarious. This last, which is the practical part of this opinion, is completely confuted in a subsequent part of this treatise; but it is proper to show here how far such a view is true, as this may be a means of reconciling the two. If violation is not a right, but is a violation of a legal right, it can only be so by the circumstance of its being at the same time a violation of a legal right. But if the disturbance of possession is effected by a legal right, such a disturbance is illegal act is illegal, and such illegal act is the very thing which it is the object of an interdict to remedy. All possessorial interdicts then agree in this: they presuppose an act which in its form is illegal.

Possessorial interdicts were not limited to cases of violence; they comprehended the three wilts possessum.

(Turner, Black, ii. 21; 52.)
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 the judicial interdicts in 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 an application of the general rule of the law in general. The present is a legal consequence of ownership, and the right of possession, which is independent of all ownership. The owner of an estate is the legal owner of the right to retain 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 continuance 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 may be that the acquisition of possession may also be the acquisition of ownership, or that the acquisition of possession may be essential to the acquisition of ownership. Thus, in the case of occupation, the thing may be in the possession of the owner for a certain period of time, and the possession, the acquisition of the possession, is the occupation of the owner. Also, when a thing is delivered by the owner to another, to have as his own, the acquisition of the possession is the occupation of the ownership. In these examples, ownership and possession are acquired at the same time, and there is no right that belongs to the possessor as possessor; his rights are those of owner. But the form and mode of the acquisition of the possession, viewed by itself as distinct from the acquisition of the ownership, will also be applicable to the cases of possession when possession only is acquired. For possession of itself is a bare fact, though it has no possession of any kind of property, independent of all rules of the civil law or of the jus gentium, as to the acquisition and loss of rights. (Savigny, p. 25.)

Having shown that in the Roman law all juristic possession has reference to usucapion and interdicts, and that the foundation of both is a common notion of juristic possession, Savigny proceeds to determine the material conditions of this notion.

In order to lay the foundation of possession as such, there must be detention, and there must also be the intention to possess, or the 'animus possidendi.' Consequently the 'animus possidendi' consists in the intention of exercising ownership. But this ownership may either be a person's own possession or his mere property. In the latter such 'animus possidendi' 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 exercise his property with something else.

Whether then we are considering possession as such, or that possession which is concurrently acquired with ownership; or which complete the acquisition of, or is the exercise of, ownership; the material facts of possession are the same. When ownership is transferred from one man to another, every system of law must require some evidence of it. But the evidence of the transfer of ownership may be entirely independent of the evidence of acquisition of possession; and yet both are parts of the acquisition that is inseparable from that of the acquisition of ownership. There must then generally be some act which shall be evidence of the acquisition of possession, whether possession is or is not obtained by interdict or by other means. In this connection, possession by ownership, or possession as necessary to the complete acquisition of ownership, or possession as simply the exercise of ownership.

Bracton, the oldest law writer from whom we obtain any conclusive evidence of the law of possession of our whole system, has framed his notions of possession on and borrowed his definitions from the Roman law. Whether he has always rightly understood them is a matter that would require a very careful investigation.

Bracton (c. 17) uses possessio and seisin as synonymous. He observes that it is not sufficient for one man's right to be transferred to another, unless that other obtain 'seisin'; and that possession is capable of being lost, not exerected, or destroyed, in ownership; or by causes not attended by ownership, or possession as necessary to the complete acquisition of ownership, or possession as simply the exercise of ownership.

The problem which has now been stated and elucidated is the common interest of the three systems, and it is the subject of this chapter to show how, and to what extent, the rules of possession are applicable to all three systems. One of the most important principles of Savigny's essay is that the rule of law is founded entirely on the legal distinction between the parties whose possession is in issue.
the rents is often said, in a sense, to be in possession, though he may never have had actual possession. This sense of possession is that which is expressed in the recent Statute of Limitations by the words 'receipt of the profits.' It might be called 'legal possession,' as it is for many purposes a possession which enables the possessor to acquire actual possession. But since 'legal possession' has been used in a different sense, as will be shown hereafter, the expression cannot conveniently be applied in the case here considered. Nor is the phrase 'possession by sale' for that reason above defined, is the owner's right to possess, that is, his present right to actual possession, which in the case here supposed, the owner has not. There appears then to be no one technical definition of 'possession' which can be used, that is, to express that kind of possession of land which a man has who has merely received rent from a lease.

The old form of conveying a present freehold interest in land was by foiento, that is, by leasivo of seisin, or actual delivery such as under the law a leasee obtains upon entry; and it may be one which entitles the bargainee to an immediate possession; but it may also be an estate which does not entitle him to immediate possession. There can therefore be a possession in the sense in which that word is properly understood and legally defined. If the bargainee is entitled to the immediate possession, but has not entered, he cannot maintain an action of trespass; for in such a case it is necessary to show that he is in immediate actual possession. The actual possession of land in right of a freehold estate is called seisin, a word which therefore imports both actual possession and right. Thus, 'things are in seisin of the king when the possession of the first estate of freehold is vested, has the possession of land in right of this estate.' (Preston, Estates, i. 13.)

This seems to mean 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 in land, and has not possession of it, he has notice of whatever 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 buys without notice, that is, without the possession of the estate.

It has already been stated that actual possession of land, or what is legally considered actual possession, is necessary in order to carry title. In the case of chattels personal, ownership is frequently acquired without or rather before actual possession, and it may always be so acquired by contract when the thing needed to bought and sold is clearly determined. In the case of chattels personal, ownership is frequently acquired without or rather before actual possession, and it may always be so acquired by contract when the thing needed to bought and sold is clearly determined. In the case of chattels personal, ownership is frequently acquired without or rather before actual possession, and it may always be so acquired by contract when the thing needed to bought and sold is clearly determined.

Questions as to this matter often arise in cases of loss, of insolvency of a vendor, &c., when the chattel is transferred to the vendee from the vendor before the chattel is actually delivered to a purchaser. Is it a common law that, though one party has agreed to sell and the other to buy, actual possession must be taken by the purchaser in the form of a lease, and that if he does not take possession, he shall have no legal title, even at common law, though he thereby acquires an immediate interest in the land (interesse termini), he has no estate till he enters: actual possession is necessary to give him this. This is known as a common law rule of procedure, that is, the law is to commence a conveyance by delivering a deed to a man, to acquire an estate in land with actual entry; but the statute does not give him all the advantages of actual entry, or one that is materially equal to actual entry, that would entitle us to actual possession, which is that of vested estate. (Preston, Conveyancing, i. 389.)

The words of a bargain and sale under the Statute of Uses, are, 'to the intent and purpose that he and his heirs shall have and enjoy the same as freehold estate,' but in the event of using into possession, the said A.B. may be in the actual possession of the premises, and be thereby enabled to take and accept a grant and release of the freehold, revenue, and inheritance, &c. Possession here means an actual estate such as under the old law a lessee obtains upon entry; and it may be one which entitles the bargainee to an immediate possession; but it may also be an estate which does not entitle him to immediate possession. There can therefore be a possession in the sense in which that word is properly understood and legally defined. If the bargainee is entitled to the immediate possession, but has not entered, he cannot maintain an action of trespass; for in such a case it is necessary to show that he is in immediate actual possession. The actual possession of land in right of a freehold estate is called seisin, a word which therefore imports both actual possession and right. Thus, 'things are in seisin of the king when the possession of the first estate of freehold is vested, has the possession of land in right of this estate.' (Preston, Estates, i. 13.)

It is remarked by Savigny (Das Recht Des Besitzes, p. 185), 'that in the whole theory of possession nothing seems easier to determine than the character of corporeal appre-hension which is bought and sold and is clearly determined. 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 movable 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 symbolical acts, which, through the medium of a physical act, are to give the thing the character of corporeal 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 symbolical apprehension, Savigny seems to doubt that the Roman law in all cases 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, namely, the physical possibility of imaginating 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, follows from this, that the possibility can be imaginated 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 unquestionably the master of it as the other's. It is not impossible that the corporeal hold 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 than that he possesses them. This physical possibility then is in the corporeal contact to 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 case shows the principle of Roman law is applicable to all systems of jurisprudence which 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 recognized 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 De G. & S., 431) it was held by Lord Hardwicke, that a thing in possession, as for example an estate, a house, wine, &c., &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, which provision is a complete renunciation of the possession. (Somerset v. Savy in Reinhold, K., &c., and Liborius v. Sanny in Begelegten Sachen) Savigny uses the very same example of the key, showing that it 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 rents, 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 if the lessor renews the right of possession after the assignee is the lessee, he has 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 in his assignee. But in the case of a mortgagee or not, makes no difference as to this question. It was also stated in the judgment (p. 263) that 'legal possession, that is, acceptance of the thing assigned by acceptance of the assignment is equivalent to actual entry; that is, to actual possession. This can only mean that such so-called legal possession, which is simply the right to possess, must be considered the same as actual possession, so far as the liabilities of the owner of such lease are concerned. But such possession is not equivalent to actual possession 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- hensiveness; but it is certain that it is not applicable to the cases to which particular cases must be referred. 'All possession then depends on the consciousness of unlimited physical dominion; in which to order which must be the will of the owner. It was so considered, there is no doubt; and the physical conditions of that possibility (corpus), the consciousness of which is necessary.' (Savigny, p. 228.) Possession may be acquired through a man's agent, as well as by the man himself who wishes to possess.

The animals 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. 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 purchased, it is a 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, what shall be considered a reduction of them into possession. In the case of a husband and wife, 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 using it. The husband's existence reduces it into his possession. If a promissory note is given to a wife, and the husband only receives the interest on it during his life, it will belong to the wife if she survives him. (Nash v. Nash, 2 Mad.) If stock in the funds be bequeathed to a married woman, and the executor 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 accrue to her during the overture), 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 court in favour of a husband, in right of his wife, would, if he died before he receives the thing, entitle the husband's personal representatives to the benefit of the decree. (Forbes v. Phillips, 1 Eden, 599; Jarman, Settlements, 'Preferences,' vol. ii., 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, and if it be, whether it has a like effect to that of a mortgagee. It is rather probable that it should be considered a reduction into possession, except in the case of bills of exchange or promissory notes, on which the assignee sues in his own name. In the case of the husband, however, he has only the benefit of the property unreduced into possession, against the surviving wife. (Jarman, Settlements, 'Preferences,' vol. ii.)

According to Blackstone (iii. 13), 'actual occupation of land without any title is a possession; but if actual possession is prima facie 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 perfect title,' whether it is an estate in fee or a lease, appears to me applicable to the entire chapter. The title of an estate in fee, or a lease, is the right of possession, that is, the right to possess, is not wholly due to the author, but partly belongs to the old system of our law and to the various legal remedies formerly applicable to tenancy agreements. (Blackstone, Com. l. ii., c. 10, 'On Possessory Actions,' &c.) In the case of personal chattels, 'right of possession' is sometimes used by the judges to signify the right to possess, as distinguished from actual possession. (Doxams v. Sandford, 3 Bingon, 948.) But the English law admits a right of possession as distinct from property and from the right to possess; as for instance, in the case of a man finding a thing, who has such a property as will enable him to keep it against all but the rightful owner. This law therefore adds, his right is founded 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 doer.

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 considered, there was not even a beginning of a post-office before that period. Few of the motives to written communication could be said to exist. Each district 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 correspondence. The king summoned his barons from all quarters of the kingdom by the herald, and his 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-office was thus spent upon the most important of the large item in the charges of the royal household. As early as the reign of King John, the payments to Nuncie for the carriage of letters may be found enrolled on the Close Rolls. Samuel, the Port, and Mise-Rolls of the fourteenth and fifteenth centuries show the almost unbroken series through the records of subsequent reigns. Nuncie also formed part of the establishment of the more powerful nobles. In a wardrobe account of 27th year of Edward I., we find a specimen of the mode in which the payment was made. The account of the common of Regis de Hastang redento ad eundum dominium sum cum litteris Regis, pro expensis suis sic readeundo—xe.' 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 III. he rode, and found it more suitable to have horses at fixed post 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 riders, who handed letters to one another, and by this means to have conveyed letters 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 at last undertook to continue them, and subjected them to its surveillance. Before any substantive evidence appears of the superintendence of the posts by the government, the superscription often met with, of 'haste post' upon letters taken at the close of the fifteenth century, and beginning of the sixteenth centuries, is sufficient to show that the posts had become the customary channel for transmitting letters in the swiftest way.

A statute in 1548 (2 and 3 Edw. VI., c. 2) fixed a penny as the rate to be chargeable for the hire of post-horses. In 1571, 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 have a permanent station with them. The exact date of the recital of the duties and privileges of a postmaster seems to have been made by James I. in 1602 (3rd Car. I., p. i. m. 15 d. Farther, vol. 19, p. 389). But it consisted only in the ordinary office of the 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 foreign parts, to or from' all foreign parts, with power to grant moderate salaries; the office was granted to Matthew le Quester, and Matthew le Quester's son; all others were publicly prohibited that they should not 'by any exercise or intrusion themselves: the said M. le Quester made and substituted William Frizell and Thomas Witheringes his deputies, and his Majesty accepted the substitution. The king, 'afflicting the people with taxes, and taking into his princely consideration how much it impairs his state and his realm that the secrets thereof be not disclosed to foreigne nations, which cannot be prevented if a somewhat useful of transmitting or taking up of foreigne letters and packets should be suffered,' forbad all others from exercising that which to the office of such postmaster pertaineth, at their utmost perils. In 1653 a proclamation was made 'for settling the post-office of England and Scotland.' It sets forth that there had been no certain or constant intercourse between the kingdoms of England and Scotland; and commands 'Thomas Witheringes, Esq., his Majesty's postmaster of England for foreign parts, to send out every post or every day, 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 stable one or two horses: 2d. for a single horse and 5d. for two horses per mile; 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 1660 a proclamation was made concerning the sequence of the offices of postmaster for foreign parts, and also of the letter-office of England, into the hands of Philip B Burlamaqui of London, merchant; but in 1662 it was resolved by a committee of the House of Commons that this sequence was 'a grievance and illegal, and ought to be taken off,' and that Mr. Wytherings ought to be restored. As late as 1644 it appears that the postmaster's duties were not connected directly with the parliamentary standing committee. The Lords of the Commissions of the Commons, making use of the powers of the committee, for seeing that the bills of lading, and therefore the letters and couriers being at present void, order that Edmund Prideaux, Esq., a member of the House of Commons, shall be, and is hereby constituted, master of the post, messengers, and couriers.' He at first established a weekly conveyance of letters into all parts of the nation, thereby saving to the public 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 court 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 take and hold the care of all post-letters being sent from one part of the kingdom to another.' Congress 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 the carriage of all post-letters, and letters sent abroad, 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 these nations, but also to convey the publick dispatches, and to discover and prevent many dangerous and wicked designs which have been and are daily contrived against the peace and safety of the state, so that all letters of intelligence cannot well be communicated but by letter of escript. It also enacted that 'there shall be one General Post-office, and one officer stilled the postmaster-general of England and compropionate; whose office did call the name of the 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 foreign parts, to or from foreign parts, with power to grant moderate salaries; the office was granted to Matthew le Quester, and Matthew le Quester's son; all others were publicly prohibited that they should not 'by any exercise or intrusion themselves: the said M. le Quester made and substituted William Frizell and Thomas Witheringes his deputies, and his Majesty accepted the substitution. The king, 'afflicting the people with taxes, and taking into his princely consideration how much it impairs his state and his realm that the secrets thereof be not disclosed to foreigne nations, which cannot be prevented if a somewhat useful of transmitting or taking up of foreigne letters and packets should be suffered,' forbad all others from exercising that which to the office of such postmaster pertaineth, at their utmost perils. In 1653 a proclamation was made 'for settling the post-office of England and Scotland.' It sets forth that there had been no certain or constant intercourse between the kingdoms of England and Scotland; and commands 'Thomas Witheringes, Esq., his Majesty's postmaster of England for foreign parts, to send out every post or every day, 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 stable one or two horses: 2d. for a single horse and 5d. for two horses per mile; 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 1660 a proclamation was made concerning the sequence of the offices of postmaster for foreign parts, and also of the letter-office of England, into the hands of Philip B Burlamaqui of London, merchant; but in 1662 it was resolved by a committee of the House of Commons that this sequence was 'a grievance and illegal, and ought to be taken off,' and that Mr. Wytherings ought to be restored. As late as 1644 it appears that the postmaster's duties were not connected directly with the parliamentary standing committee. The Lords of the Commissions of the Commons, making use of the powers of the committee, for seeing that the bills of lading, and therefore the letters and couriers being at present void, order that Edmund Prideaux, Esq., a member of the House of Commons, shall

Under 80 miles: 2d. single letter.
Between 80 and 140 miles: 2d. double letter.
Above 140 miles: 4d.
On the borders and in Scotland: 8d.

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 House of Commons in 1660, were fully de

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 80 miles, 2d.; above 80 miles, 3d. From London to Berwick, 3d.; to Dublin, 6d. Letters of two sheets were
charged double. By the 9 Anne, c. 11, a penny was added to several of the rates previously established; a letter from London to Edinburgh was charged 6d. The addition subsequently made appear in the following table:—

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.

**SCALE OF DISTANCES,**

<table>
<thead>
<tr>
<th>1710</th>
<th>1725</th>
<th>1794</th>
<th>1797</th>
<th>1801</th>
<th>1805</th>
<th>1812</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ENGLAND.</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>From any Post-office in England or Wales to any place not exceeding 15 miles from such office</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>For any distance above 15 miles, and not exceeding 20 miles</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Above 20 miles, and not exceeding 30 miles</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>— 30</td>
<td>50</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>— 50</td>
<td>80</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>— 60</td>
<td>120</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>— 120</td>
<td>170</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>— 170</td>
<td>230</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>— 220</td>
<td>300</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>— 300</td>
<td>400</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>— 400</td>
<td>500</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

And so on in proportion, the postage increasing progressively 1d. for a single letter for every like excess of distance of 100 miles.

These rates were applied to general-post letters passing from one post-town to another post-town. The principle of the rates was to 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 a 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 Menai, 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></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>2d</td>
<td>95</td>
<td>9d</td>
</tr>
<tr>
<td>15</td>
<td>3</td>
<td>120</td>
<td>10</td>
</tr>
<tr>
<td>25</td>
<td>4</td>
<td>150</td>
<td>11</td>
</tr>
<tr>
<td>35</td>
<td>5</td>
<td>200</td>
<td>12</td>
</tr>
<tr>
<td>45</td>
<td>6</td>
<td>250</td>
<td>13</td>
</tr>
<tr>
<td>55</td>
<td>7</td>
<td>300</td>
<td>14</td>
</tr>
<tr>
<td>65</td>
<td>8</td>
<td>—</td>
<td>—</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-Grand; 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:

<table>
<thead>
<tr>
<th>Average rates, Multiple Letters being included and counted as Single.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Packet and ship letters</td>
</tr>
<tr>
<td>— and inland general-post letters</td>
</tr>
<tr>
<td>Ditto, ditto, and London 2d. and 3d. post letters</td>
</tr>
<tr>
<td>Ditto, ditto, ditto, and country 1d. post letters</td>
</tr>
<tr>
<td>Inland general-post letters only</td>
</tr>
<tr>
<td>Ditto and London 2d. and 3d. post letters</td>
</tr>
<tr>
<td>Ditto, ditto and country 1d. post letters</td>
</tr>
</tbody>
</table>

**Average rates, Multiple Letters being excluded.**

Single inland general-post letters | 7:4424 = nearly 7 1/4 |
| Ditto and London 2d. and 3d. post letters | 6:5802 = little more than 6 1/4 |

**Franking.**—As early as a post-office was established, certain exemptions from the rates of postage were made. Parliamentary franking existed in 1735. An entry is registered on the Journals of the House of Commons on 19th October, 1666, '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 paper 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 18th 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:—
56,000,000 of general-post chargeable letters, equivalent at ½d. to 63,000,000
4,813,448 Parliamentary franks... to 9,629,896
2,109,010 Official franks... to 16,782,080
77,542 copies of the statutes... to 1,096,046
63,000,000... 90,507,025

The privileged letters therefore, reduced to the standard of single letters, amounted to 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 1/2ths of an ounce; the average weight of a parliamentary frank-about 4 1/2ths of an ounce; that of an official frank... about 1 3/4ths oz., or nearly two ounces; and that of a copy of a public statute 3 11/2 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>Number.</th>
<th>Rate per Letter.</th>
<th>Revenue.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parliamentary franks</td>
<td>4,813,448</td>
<td>17,392</td>
</tr>
<tr>
<td>Official franks...</td>
<td>2,109,010</td>
<td>70,299</td>
</tr>
<tr>
<td>Statutes distributed...</td>
<td>77,542</td>
<td>112,793</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>7,000,000</strong></td>
<td><strong>1,002,229</strong></td>
</tr>
</tbody>
</table>

Newspapers with a few exceptions free from 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 1768 the annual revenue from postage was 10,000L, and in 1849 for 14,000L. (Journals of the Commons.) In 1865 it was increased to 21,500L, and the amount settled on the Duke of York. In 1874 the farming of the revenue was increased to 45,000L. In 1885 it was increased to 65,000L. Parliament granted the rate after 1888, though the king continued to receive the revenue. In 1711 the gross revenue was reckoned at 111,456L. From 1716 to 1873 the average yearly net revenue was 97,540L, farmed upon a certain account and not an estimate. (Commons Journals, April 16, 1735.) In the Postage Reports of 1838 (vol. ii., App. p. 176; vol. i., p. 511) are accounts showing the gross receipt, charge of management, net receipt, and rate per cent. of collection in Great Britain from 1788 to 1837, and in Scotland and Ireland from 1800 to 1837. The accounts for a few years will serve to show its progress.

### GREAT BRITAIN

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1758</td>
<td>222,075</td>
<td>148,343</td>
<td>73,730</td>
<td>66 11 11</td>
<td></td>
<td>1758</td>
<td>11</td>
<td>12</td>
<td>13</td>
<td>14</td>
<td>15</td>
</tr>
<tr>
<td>1769</td>
<td>305,068</td>
<td>140,298</td>
<td>164,760</td>
<td>45 19 9</td>
<td></td>
<td>1769</td>
<td>12</td>
<td>13</td>
<td>14</td>
<td>15</td>
<td>16</td>
</tr>
<tr>
<td>1779</td>
<td>405,990</td>
<td>136,722</td>
<td>269,268</td>
<td>65 8 4</td>
<td></td>
<td>1779</td>
<td>17</td>
<td>18</td>
<td>19</td>
<td>20</td>
<td>21</td>
</tr>
<tr>
<td>1786</td>
<td>520,500</td>
<td>225,322</td>
<td>295,178</td>
<td>54 19 1</td>
<td></td>
<td>1786</td>
<td>22</td>
<td>23</td>
<td>24</td>
<td>25</td>
<td>26</td>
</tr>
<tr>
<td>1799</td>
<td>1,012,731</td>
<td>324,737</td>
<td>675,388</td>
<td>38 2 1</td>
<td></td>
<td>1799</td>
<td>50</td>
<td>51</td>
<td>52</td>
<td>53</td>
<td>54</td>
</tr>
<tr>
<td>1816</td>
<td>2,193,741</td>
<td>594,043</td>
<td>1,599,698</td>
<td>28 7 6</td>
<td></td>
<td>1816</td>
<td>80</td>
<td>81</td>
<td>82</td>
<td>83</td>
<td>84</td>
</tr>
<tr>
<td>1837</td>
<td>2,206,736</td>
<td>609,220</td>
<td>1,517,516</td>
<td>27 1 6</td>
<td></td>
<td>1837</td>
<td>87</td>
<td>88</td>
<td>89</td>
<td>90</td>
<td>91</td>
</tr>
</tbody>
</table>

### SCOTLAND

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1800</td>
<td>100,651</td>
<td>14 8,658</td>
<td>88,273</td>
<td>66 11 11</td>
<td></td>
</tr>
<tr>
<td>1837</td>
<td>220,758</td>
<td>13 10 59,545</td>
<td>160,813</td>
<td>69 27</td>
<td></td>
</tr>
</tbody>
</table>

### IRELAND

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1838</td>
<td>2,462,269</td>
<td>669,940</td>
<td>1,292,311</td>
<td>1,666,798</td>
<td>23 4</td>
</tr>
<tr>
<td>1837</td>
<td>2,467,216</td>
<td>669,756</td>
<td>1,008,938</td>
<td>1,676,522</td>
<td>27 2 11</td>
</tr>
</tbody>
</table>

The Select Committee on Postage, in 1838, instituted the following comparison between the Post-office revenue of the six years ending 5th January, 1838, and that of six years ending 5th January, 1821.

It thus appeared that an average gross revenue of 2,190,867L. There had been in nineteen years a positive increase of 60,987L, averaging only 359L yearly, or little more than 1/2p per thousand, though the advance had been rapid in population, and still more so in wealth, industry, and trade.

Establishment, Cost of Management, &c.—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. It is considered political, 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 exchanged for the permanent commissions; and a bill passed the Commons to give effect to the recommendation, but was thrown out by the Lords. The last return of the force of the establishment was made in 1838 and was as follows:—

1. Postmaster-General.

<table>
<thead>
<tr>
<th>London</th>
<th>Dublin</th>
<th>Edinburgh</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of persons employed in secretary's office:</td>
<td>17</td>
<td>7</td>
</tr>
<tr>
<td>Mail-coach office:</td>
<td>12</td>
<td>2</td>
</tr>
<tr>
<td>Solicitor:</td>
<td>9</td>
<td>3</td>
</tr>
<tr>
<td>Receiver-general:</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Accountant-general:</td>
<td>15</td>
<td>7</td>
</tr>
<tr>
<td>Surveyors:</td>
<td>8</td>
<td>3</td>
</tr>
<tr>
<td>Post-officer:</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>Dead-letter office:</td>
<td>18</td>
<td>3</td>
</tr>
<tr>
<td>Foreign office:</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>Inland office:</td>
<td>80</td>
<td>32</td>
</tr>
<tr>
<td>Inspectors of letter-carriers:</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Messengers:</td>
<td>30</td>
<td>8</td>
</tr>
<tr>
<td>General-post letter-carriers:</td>
<td>201</td>
<td>78</td>
</tr>
<tr>
<td>Mail guards:</td>
<td>22</td>
<td>18</td>
</tr>
<tr>
<td>Sea-mail guards:</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>Housekeeper, bagmen, watchmen, &amp;c.:</td>
<td>23</td>
<td>14</td>
</tr>
<tr>
<td>Post-office postmaster:</td>
<td>20</td>
<td>8</td>
</tr>
<tr>
<td>Twopenny-post letter-carriers:</td>
<td>464</td>
<td>59</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,337</strong></td>
<td><strong>258</strong></td>
</tr>
</tbody>
</table>

Expenses: £26,234,170 to £18,394,192. £2,725,650, Parl. 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 other changes were made, which were estimated to reduce the expenses above 4700L per annum. In London the saving was estimated at 645L 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-Grand. 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 the morning, including newspapers, about 386. In the evening about 180 letter-carriers are engaged on newspapers, the nightly average of which is about 50,000. On Saturdays the numbers often exceed 100,000. Constant additions are made to the number of post-offices throughout the kingdom. At the present time the following, considering posts formerly called penny-post, &c.
clause posts, and sub-offices as post-offices, may be taken to be about the number of letters sent in reach of.

Post-Offices, Sub-Offices, Penny-posts. Total.

England . 600 190 1090 1930
Scotland . 220 103 230 555
Ireland . 330 105 200 635
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 300 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 consisted 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>£ s. d.</th>
<th>£ s. d.</th>
<th>£ s. 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>96,485 2 2</td>
<td>96,485 2 2</td>
<td></td>
</tr>
<tr>
<td>Salaries and Allowances to Deputy-Postmasters and Agents in Great Britain, Ireland, and the Colonies</td>
<td>124,403 11</td>
<td>110,024 17 11</td>
<td></td>
</tr>
<tr>
<td>Salaries and Wages to Officers and Letter-carriers in the Twopenny Post-office</td>
<td>45,574 10 1</td>
<td>45,574 10 1</td>
<td></td>
</tr>
<tr>
<td>Allowances for Special Services and Travelling Charges</td>
<td>11,106 6 7</td>
<td>11,106 6 7</td>
<td></td>
</tr>
</tbody>
</table>

Consequence 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 | 102,619 12 10 |

Mileage to Mail Coaches, Wages to Mail Guards, and other Mail Coach Expenses | 107,122 8 0 | 107,122 8 0 |

Tolls paid on Mail Coaches | 33,862 1 5 | 33,862 1 5 |

Riding-work and conveyance of Mails in Canada, Nova Scotia, and Jamaica | 17,081 17 10 | 17,081 17 10 |

Riding-work of the Twopenny Post-office | 5,198 17 2 | 5,198 17 2 |

Transit Postage through Foreign Countries | 11,718 15 4 | 11,718 15 4 |

Ship-Letter Payments | 10,649 9 9 | 10,649 9 9 |

Packet Service, Expenses, including Post-dues | 62,506 3 0 | 39,957 12 7 |

Tradesmen's Bills, Building and Repairs | 41,326 19 8 | 9,136 19 8 |

Rent of Offices, Tithes, and Taxes | 4,140 0 0 | 4,140 0 0 |

Law Charges | 9,417 4 5 | 4,000 0 0 |

Stationary, Printing, Advertising, and Postage | 3,717 7 1 | 1,717 7 1 |

Superannuation Allowances, and Allowances for Offices and Fees abolished | 20,536 10 3 | 20,536 10 3 |

Other Payments | 1,787 12 5 | 1,787 12 5 |


Menai Bridge, Conway Bridge, and Milford Road | 17,372 19 6 | 287,366 11 6 |

Total Cost of Distribution in United Kingdom | 698,632 2 2 | 575,384 13 1 | 123,247 9 1 |

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 the expense 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 raiding officers in Colonies; see Returns of Expenditure, in Appendix to Second Report of Committee, p. 230. Other Colonial Expenses; see Returns of Expenditure, in Appendix to Second Report, p. 230. Stated in Return of Expenditure, in Appendix, p. 230, as 10,000l. 7s. 10d. Expenses of Passage-money and freight by the packets; see Appendix to Report II., p. 230. Expenses of the Foreign and Colonial Packets; see Appendix to Report II., p. 230.
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 Commons’ Committee, in 1836, to be as follows:

- Chargeable letters—

  **General Post, inclusive of foreign letters, and reckoning double and triple letters as single**
  57,000,000

  **2d. and 3d. post letters**
  12,500,000

  **Country penny-post letters**
  8,000,000

- **Franks**
  77,500,000

- **Newspapers**
  4,450,000

**129,000,000**

A more detailed estimate, the result of very elaborate calculations, is appended to the ‘Report of the Commons’ Committee’ which is here subjoined—

<table>
<thead>
<tr>
<th>Description of Letters</th>
<th>Yearly Number of Letters</th>
<th>Average rate per Letter</th>
<th>Yearly Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Packet and ship letters</td>
<td>3,532,572</td>
<td>223 1652</td>
<td>769,340</td>
</tr>
<tr>
<td>General Post inland letters above 4d.</td>
<td>46,378,800</td>
<td>9 222 4</td>
<td>1,782,191</td>
</tr>
<tr>
<td>Ditto, not exceeding 4d.</td>
<td>5,153,200</td>
<td>3 5</td>
<td>75,151</td>
</tr>
<tr>
<td>London local-post letters</td>
<td>11,837,892</td>
<td>2 266</td>
<td>11,753</td>
</tr>
<tr>
<td>Country penny-post letters</td>
<td>8,030,410</td>
<td>1</td>
<td>234,838</td>
</tr>
<tr>
<td>Total</td>
<td>74,225,836</td>
<td>76704</td>
<td>2,374,923</td>
</tr>
<tr>
<td>Official franks, for public purposes</td>
<td>4,813,448</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public statutes</td>
<td>2,109,010</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Newspapers</td>
<td>4,450,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total of documents transmitted by post</td>
<td>126,423,836</td>
<td></td>
<td>2,374,923</td>
</tr>
<tr>
<td>Unappropriated</td>
<td></td>
<td></td>
<td>4,641</td>
</tr>
<tr>
<td>Total revenue from letters, 1837</td>
<td></td>
<td></td>
<td>2,379,564</td>
</tr>
</tbody>
</table>

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 weight of the chargeable letters in the letters and franks 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 weighed
  - Per cent.

| Bags weighed | 68 | 14 |
| Letters, including franked letters and documents | 91 | 20 |
| Newspapers | 304 | 66 |
| **463** | **100** |

The management of the conveyance of the mails by sea and land is subjected, 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, 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 ten 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 horse and one coach, the latter for work in Ireland, by single-horse carts, on horseback, and foot.

Number of miles travelled over in England and Scotland by mail-coaches in the following years, was as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Miles.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1834</td>
<td>5,911,006</td>
</tr>
<tr>
<td>1835</td>
<td>5,391,208</td>
</tr>
<tr>
<td>1836</td>
<td>6,345,478</td>
</tr>
</tbody>
</table>

And a Parliamentary Return, printed 1836 (No. 364), presented the following account of the speed and cost of the mail-coaches:

<table>
<thead>
<tr>
<th>Country</th>
<th>Miles.</th>
</tr>
</thead>
<tbody>
<tr>
<td>England.</td>
<td>127.</td>
</tr>
<tr>
<td>Ireland.</td>
<td>127.</td>
</tr>
<tr>
<td>Scotland.</td>
<td>127.</td>
</tr>
</tbody>
</table>

**Greatest speed travelled per hour.**

- **104**
- **91**
- **97**

**Slowest.**

- **6**
- **84**
- **84**

**Average speed,**

- **142**
- **142**
- **142**

**Average mileage for 4-horse mails.**

- Per mile. | Per English mile. |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>127.</td>
<td>127.</td>
</tr>
</tbody>
</table>

**Ditto for 2-horse do.**

| 11 | 11 |

Since this Return, in 1836, was made, the acceleration of the mails by the use of railroads has been nearly doubled, and now the mails come out of London by underground railways and are conveyed by them. At the present time, upwards of a fourth of the whole correspondence of the United Kingdom is carried by the Birmingham Railroad. The mail between London and Exeter, instead of 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 1784, Mr. Palmer, who was manager of the Bath and Bristol theatres, laid a plan before Mr. Pitt, which was adopted by the government for the opposition of 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 morning and reached Bath on the following morning, the post did not arrive till the second afternoon. Slowness was not the only defect; it was also irregular, and very insecure. The robbery of the mail was very common. Mr. Palmer succeeded in perfecting the mail-coach system, and in greatly increasing 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 post-office has since these changes been continued for twenty years about 150,000fly. a year. In ten years after Mr. Palmer’s plan had been in work, the net revenue increased to 400,000; 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 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, to make the merits of the suggestion of a uniform rate, is discussed with singular difficulty, 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 chargeable 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 conveyance was not in proportion to the rate charged, when divided among the letters actually carried, did not exceed 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 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, to the metropolis, to the House of Lords, spoke strongly in favour of the plan. In the December of the same year the government assented to the appointment of a select committee to inquire into and report upon the plan. A society of merchants was formed in the City of London to furnish evidence in support of the importance of the measure and the insufficiency of the 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 1837-38 a motion for the London Post-office Committee in favour of the plan was moved. In 1838 upwards of 320 were presented, 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. Rowland Hill and eighty-three witnesses, besides the officers 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 which had formed the information from very scanty and imperfect materials. The committee summed up a very long report as follows:—

The excessively 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 nominal profits, and the fact that postage was 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 well as the wickedness and misleading of the Post-offices, the writing of the Post-office, and the excess of the gross 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 imperfect data, that whenever on former occasions large reductions in the rates have been made, these reductions have been followed in short periods of time by an extension of correspondence proportionate to the contraction of the rates.

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 deliveries, and more frequent and more prompt dispatches of letters.

That owing to the rapid extension of railroads, there is an urgent and daily increasing necessity for making such changes.

That any moderate reduction in the rates would occasion loss to the revenue, without in any material degree diminishing the present amount of letters irregularly conveyed, or giving rise to the growth of new correspondence.

That the present uniform rate is too high itself, and when combined with pre-payment, and collection by means of a stamp, would be exceedingly convenient, and highly satisfactory to the public.

The appearance of the Committee's report seemed to instil confidence in the whole country with confidence in the plan. Petitions in its favour amounting to 2000 were presented to both houses of parliament in the session of 1839. The late postmaster-general, the duke of Richmond, advised the government to adopt it; and the chancellor of the exchequer brought forward a bill to enable the Treasury to carry the plan into effect, which was carried by a majority of one hundred in the House of Commons, and passed into law on the 17th August, 1839. In the following month an arrangement was made which secured Mr. Rowland Hill's superintendence of the working out his own measure. On the 6th December, 1839, as a preparatory measure, to accustom the department to the mode of charging by weight, the mail dist was made to run by weight. This temporary measure continued until the 1st July 1840, when a uniform inland rate of postage of 1d. per half ounce, payable in advance, or 2d. payable on delivery, came into operation. On this day parliamentary friction entirely ceased. On the 6th May stamps were introduced; only three of the proposed forms were ready at this time, the covers, envelopes, and labels. The warrants of the lords of the Treasury which authorised these changes were published in the London Gazette of the 22nd November, 29th December, 1839; 25th April, 1840. The effect of these changes on the revenue cannot at present be accurately shown; but it is estimated that the loss of net revenue on the first year will be above one million. Returns have been made which show the increase of the number of letters posted from 10,000,000 to 10,000,000, of which 4,000,000 were letters for the week ending 24th November, 1839, before any changes took place, was 1,385,973 letters, including franks; for the week ending 22nd December, 1839, the number was 5,000,000; and for the week ending 23rd February, 1840, 1,319,637. The number of chargeable letters dispatched by the General Post increased 40 per cent. under the 1d. rate, and 165 per cent. (or, deducting the government letters, 117 per cent.) under the 1d. rate. The number of chargeable letters dispatched by the General Post increased 40 per cent. under the 1d. rate, and 165 per cent. (or, deducting the government letters, 165 per cent.) under the penny rate.

The following are the returns made to the House of Commons (printed, No. 501) of the number of letters for the whole kingdom since the 23rd February, 1840:—

<table>
<thead>
<tr>
<th>Week ending</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>22 March, 1840</td>
<td>3,056,496</td>
<td></td>
<td></td>
</tr>
<tr>
<td>26 April</td>
<td>&quot;</td>
<td>2,934,865</td>
<td></td>
</tr>
<tr>
<td>22 May</td>
<td>&quot;</td>
<td>3,135,035</td>
<td></td>
</tr>
<tr>
<td>21 June</td>
<td>&quot;</td>
<td>3,221,208</td>
<td></td>
</tr>
</tbody>
</table>

POSTING, from the French 'poste', derived from the Low Latin word posita (place), is so called from horses being placed at certain stations or posts, where they may be hired by individuals at their pleasure. The application of the words 'post' and 'postmaster' as well to persons holding the corresponding offices and the business entrusted to them is the French, and the use of the English language is not confined to the English language. Post-horses were first established by the governments of the continent of Europe in the thirteenth and fourteenth centuries for the conveyance of dispatches. As occasional important events were conveyed by persons connected with such governments, and gradually by passengers in general. Posting continues in most countries to be carried on by the state, which retains a monopoly of the mail service, and use of forwarding mail 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) in the states at least in which the term is commonly used; that is to say, a person cannot have his carriage 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 at the same horses as long as he convey him through that part of his journey, unless another large town should lie on the road. This is the mode of travelling known on the Continent by the name of 'vetturino,' 'voiturier,' or 'Lohnkutscher.' The want of the power of posting is not so inconvenient as Master holiday week. 3 N 2
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, canals, 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 rates, both for post-horses and for the conveyance, are fixed. The charge for each horse is 15d. for a post of five English miles; and there is an addition to this charge on entering larger towns. The average rate of travel is from five to six 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, for the preservation of letters and passengers through his dominions, the exclusive privilege of furnishing horses for the conveyance of letters and passengers through 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 service is slow. (Murray's Handbook for North Germany, p. 188.)

In Holland the posting regulations introduced by the French still remain in force, and are nearly identical with those in force in France. In each post of about four English miles may be travelled with a pair of horses for about 3l. 4d. English; this sum does not include tolls, which are extremely high in that country. (Murray's Handbook, North Germany.)

In Belgium posting is under nearly the same regulations as in France: the cost of a pair of horses is about 1z. an English mile, post-boy included.

In Switzerland posting is confined to certain routes near the borders of the empire, and is not permitted beyond 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 speculation 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 travellers must find their own carriages, as post-carriages are not provided by the peasants. (Murray's Handbook for South Germany, and Paget's Hungary, i. 36.)

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 afterwards deducted from the price paid for the horses. Posting costs from 4s. 6d. to 6s. English for four horses for twelve miles; the drivers get a trifile, 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 times required. (Voyages in Russia, vol. ii.)

Posting is very generally established in England, but is now less used in consequence of the introduction of railways. In frequented 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 inhabited at inns 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 then employed for the mail very long stages especially 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 171. The trade is wholly in the hands of private speculators. The rate of travelling on the principal roads is about three miles an hour; 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 depends solely on the discretion of the party hiring, which are controlled by no legal regulation whatever. The payment is estimated per mile for each pair of horses, without reference to the number of persons conveyed; the price varies as the distance of the journey, and at the same rate 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 on account of the price of posting is nearly uniform throughout England, but there is considerable variation in the degree of goodness of the horses and chaises provided. On much-frequented roads, where the turnpike-keepers are active and in trade, the accommodation is very superior to what is found at little-frequented inns, 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, 7s. 6d.; for coach, 10s. 6d.; for stage-coach, 15s. 6d. 3. One horse for each pair of horses is required, and, when the horses are hired to travel, this is left on 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 the tickets are not in proportion he has power to demand from the postmaster a fine for each horse over or under the number of miles which the horses are hired to travel; this ticket is left by the postboy at the first turnpike.

The post-office is conducted by an excise officer, and is chiefly managed by the postmaster in each district. It is under the control of the postmaster, who receives the rates paid by the passengers, and in return provides them with horses. (History of the Post Office.)

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 government monopolies is always in the interests of the government. It is very evident that such a system 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 government monopolies; 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.
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 immoral than is usual. Considering that under the system 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 postilions are already in fact, a monopoly that is not restricted to the inn-keeper, but a rich resident population or generally such other circumstances as attract travellers from other countries: there is no 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 in all cases, because it is not the monopoly system that is required.

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 states continuing 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 none of the works by one Lollobrigida, to whom he ascribes 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 as little as my case would allow, in 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 occupied me. 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 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, it might 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 ingenious enough to think that he has a right to be treated upon a footing something different from that of an uppstart 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 application of the principles there laid down, has been neither to 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 kindling wood.

His other works are:—1, 'Considerations on the Revival of the Royal British Assiento between His Catholic Majesty and the Hon. the 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,' &c. 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., 1757; 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, 1753,' 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.'

POSTULATUM, (Eccles.)

POSTULATUM, (Eccles.)

POSTULATE (postulatum, arguo), a thing required to be granted, or the use of which in reasoning is demanded.

We decide between a postulate and an axiom as follows:—In the one case lies in—this—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 nature 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 are applied, 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 the usual axiom.

POSTUMUS, a native of Gaul, distinguished himself in the Roman service, and was appointed by Valerianus governor of the Gauls. Under the weak reign of Gallienus he was saluted emperor by the troops in that part of the empire. Postumus ruled Gaul for ten years with great ability and moderation, says Eutropius: he repulsed the Germans, who had invaded the country, and restored peace, but he was at last killed in a mutiny of the soldiers headed by a few villains, because they had plotted against the Emperor. Postumus was killed also two years after. (Eutropius; Trebellius Pollio, 'Triginta Tyranni,' in 'Historia Augusta.')

POSYDON, a genus of crustaceans, established by Fabricius, which M. Desmarest thinks should be placed near to Albunea.

POT-METAL, an alloy of lead and copper used for the purpose expressed by its name.

POTADOM'A, Mr. Swainson's name for a subgenus of fluvialite shells, genus Melania, subfamily Melaniaceae, family Turbiidae. Mr. Swainson defines the form as having the general characters of Melania, but the outer lip hardly dilated, and the top of the inner lip internally thickened. He adds his suspicions that the true distinction of this second type of Melania will rest on the deciduous nature of the spine.

POTAMIS, a genus of fresh-water shells resembling Cerithium in the aperture, but differing from that genus by the possession of a thick horny epidermis. Mr. G. B. Sowerby, jun., thinks that it should be placed near Melania (Manual).

Mr. Swainson makes Potamia, Brong. (Potamia), the first genus of its subfamily Cerithiaceae, with the following characters:

Fluviatile, covered with a brown epidermis; whorls corona- tted and armed with spines; aperture almost entire, the notch being slightly developed; top of the outer lip with an obsolete sinus. Example, Potamia muricata.

Prena immediately follows this genus in Mr. Sowerby's arrangement.

POTAMOC. (Eccles.)

POTAMOC'BLIA, Dr. Leach's name for a genus of crustaceans allied to Thelphusa.

POTAMOMY'A, a genus of fresh-water shells bearing a resemblance to Corbicula, and, in the opinion of Mr. G. B. Sowerby, jun., probably belonging to the Myriacia.

POTAMON. (Eccles.)

Savigny's name for a genus of crustaceans allied to Thelphusa.

POTAMOPHI'LIA, Sowerby's name for a genus of fluvialite conchifers.

Generic Character. — Shell thick, equivale, inequilateral, trigonal, covered with a greenish brown, smooth, horny epidermis; hinge thickened, broad, with one central notched cardinal tooth in one valve, and two in the other,
lateral teeth indistinguishable; ligament large, supported on prominent fulcrum; muscular impressions two in each valve, subicular.

Sowerby."

This is the *Purus subvitae* of some authors, "Galathera" of other, but little, it is used by him to designate a genus of crustaceans, and *Megaestoma* of Bowdich, which last name Mr. G. B. Sowerby, jun. considers to have the right of priority.

*Potamo* PHIURUS, Latreille's name for a genus of crustaceans allied to *Thaliphus*, if not identical with it. Indeed M. Desmarest thinks that *Potamon* and *Potamobius* differ essentially in bringing fused hydride of potash into contact with iron turnings heated in a gun-barrel; at this high temperature the hot water containing its oxides, is decomposed essentially, and the water and the potassium of the potash appear at the negative pole. This process yields however very small quantities of potassium and gas, and Husscar 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 *Recherches Physico-Chimiques*; the present mention is for the purpose of bringing to our notice the value of this process in producing potash, which is an essential constituent of all fire-places. It is principally precipitated by carbonic acid from it, and carbon dioxide, 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 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 till the temperature reaches 150°; if heated to low redness, it is converted into the air, it sublimes, and condenses on cooling, unchanged. Its texture when brittle is crystalline. Its specific gravity at 40° is 0.865; it is opaque, and does not reflect heat of electricity.

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 comparatively the least able to resist the attack of the atmosphere, 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 purple flame, the evolution of much heat, 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. It is, however, remarkable that in this case 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.

As the gaseous body is formed, forming compounds of the highest importance and utility in many respects. We shall first describe the compounds of *Oxygen* and *Potassium*. These form two compounds, protioxide 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 hydrate 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, then the hydrate is formed. Its properties are that it is white, solid, extremely soluble in water, 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 solution possesses 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 commodities of potash.

Potash, or protoxide of potassium, is composed of

- One equivalent of oxygen
- One equivalent of potassium
- Equivalent

This substance exists in some minerals, but in the largest quantity the protioxide is obtained by heating to decomposition, and this process is carried out in the same manner, with much heat being evolved in the process for the purpose of storing the substance. It takes on carbonate of lime, and forms with it pottaspermite, or potash carbonate, which is the subject of the next section of this article. It is highly reputed for its medicinal properties, and is extensively employed in the chemical arts and also in medicine, and for these purposes it is obtained by the incineration of wood ashes, or the ashes of which the wood is a principal constituent of the tree or plant. 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 potash of commerce is principally carbonate of pottaspermite, the latter being very largely imported, 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 carbonate on a flame after the combustion is over, it is found to contain potash; if this solution be evaporated to dryness, the residue is not absolute potash, as it 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 carbonate acid, carbonate of lime is formed, and remains insoluble, while the pearlash dissolves, and the solution being evaporated, hydrate of potash, frequently called merely potash, is left.

The hydrate of potash, that is to say, it is white, hard, brittle, extremely caustic, very deliquescent, and very soluble both in water and in alcohol; by evaporating the aqueous solution, crystals are obtained containing much more water. The process of the generation of heat is evolved: the solution is colourless, and though inodorous, has a strong caustic disagreeable taste; it destroys the cuticle, and acts strongly on vegetable yellows; by acids, for which the alkali has great affinity, it is converted into various salts of great importance in science, medicine, and the arts. Potash is largely employed in glass-making, more especially flint-glass, in making soap, and in the processes of calico-printing and many other chemical arts, and as a caustic in surgery.

Hydrate of potash is composed of

- One equivalent of water
- One equivalent of potash
- Equivalent

Peroxide of Potash may be obtained by burning the metal in a current of oxygen. When silver carbonate 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 site with potash, whatever, and when merely pure, it is decomposed into oxygen gas, which escapes in small bubbles, and peroxide 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.
POT

Peroxide of potassium consists of—

Three equivalents of oxygen . 24
One equivalent of potassium . 48

Equivalent . 64

Acids and Potassium do not combine.

Hydrogen and Potassium form two compounds, but the composition of neither of them is known. When hydroxyl of potash is decomposed by iron at a white heat, a gaseous hydriuret 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 a hydrogen lamp, a solid grey hydriuret 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 forbusige salt of Syrius, and afterwards mariate 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 hydrochloric acid, and the solution is evaporated, cubic crystals of this salt are 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

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 fluorine . 18
One equivalent of potassium . 40

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 produced, which, by evaporation to dryness, and subjecting it to a red heat, is totally converted into bromide of potassium. It is most commonly prepared by first forming a bromide of iron, and decomposing that salt with potash, thence 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 sharp saline taste, are very soluble in water, and most so when it is hot, and 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 this compound has not, at any rate, been procured in 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 protosulphur, or that consisting of—

One equivalent of sulphur . 16
One equivalent of potassium . 40

Equivalent . 56

This may be obtained by decomposing sulphot of potash at a red heat by hydrogen or charcoal. 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 hydroxysulphuric acid gas is evolved; it is also decomposed when added to solutions of the different metals in acids, the colour of the precipitated sulphur depending upon the nature of the metal. This salt, like ammonium carbonate, 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 not of importance.

Iodine and Potassium may be made 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 in the decomposition of the salt, into potassium iodate. 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 colourless and cubic crystals. The properties of this salt are, 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 volatilized 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 smell or bad odour, 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 base. It is sometimes employed in the preparation of hydrocyanic acid.

It is composed of—

One equivalent of cyanoget . 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 salt 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 insipid; its taste is rather saline; water at 60° and at 212° 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 loses partial decomposition; the residue when introduced into 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, assimilates with alcohol, and yields 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 precipitates most metals from their solutions in acids. This salt is also used in the manufacture of matches, and in the production of greenheart, which is used in the manufacture of gunpowder.

It is composed of:
- One equivalent of cyanide of iron
- Two equivalents of cyanide of potash
- Three equivalents of water

Equivalent: 213

SALTS OF OXIDE OF POTASSIUM, OR OXIALTS OF POTASSIUM.

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, and but seldom indeed from the immediate combination 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 Nitrate of Potash, Nitre, or Saltpetre.—It is quite true that this salt may be artificially formed by adding either the nitric oxide, potash, to nitric acid; but it is never so obtained, being in some countries formed by the putrefaction of animal matters, in others it is a natural product, and to a very great extent, and as such is largely imported from the name of the famous black nitre, where potash obtained by the lixiviation of certain soils; 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 substances of potash are, that it is colourless, 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 light rhombic prism, but they are usually six-sided prisms, with dodecahedral mites; when obtained from a large quantity of solution, the crystals are of very considerable size. The crystals contain no combined water, but it is commonly mechanically lodged between their lamellae. At about 61° of Fahr. nitre fuses, and at a high temperature it suffers decomposition; and the residue, according to the degree or continuation of the heat, is either hyponitrite of potash, potash, or a mixture of potash and peroxide of potassium. The oxides of potassium (as much cold during its rapid solution in water, so that an ounce of it is capable of reducing five times its weight of water fifteen degrees. Nitre possesses powerful antiseptic properties. It is largely employed 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
- One equivalent of potash

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 chlorate of potash and chloric of potassium; and the chlorate, being the less soluble of the two, crystallizes first. This salt is colourless, inodorous, and has a cooling astringent taste. The primary form of the crystal is an oblong rhombic 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 off nearly 60 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, and combustible gases, or explosive, or 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. [Caut. Note.] In 1753 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 tritiated, so violent an explosion occurred as to kill several persons.

It is constituted of:
- One equivalent of chloric acid
- One equivalent of potash

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, or metallic arsenic, or antimony, a drop of sulphuric 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 solution, filtration, and evaporation to dryness; it being a salt which does not readily crystallize.

Pearlash, as already mentioned, is procured by the incineration of wood: when treated with a small quantity of water, but little except the pure carbonate of potash is dissolved. The solution, when evaporated till it becomes a granular solid, has the following properties:—it is colourless 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; the aqueous solution has the alkaline property of turning vegetable dyes a dark brown, and when dried, it was formerly called subcarbonate of potash; but it is in fact a neutral carbonate, consisting of:
- One equivalent of carbonic acid
- One equivalent of potash

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, and becomes anhydrous. This salt may be artificially 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 carbonate of carbonic acid at the expense of the oxygen of the decomposed nitric acid.

This salt is largely employed in the arts, and also in medicine; it is decomposed by most acids, with effervescence of carbonic acid gas; it is also decomposed by lime and by barytes, which separate its carbonic acid, but without effervescence: no degree of heat is sufficient to expel its carbonic acid.

Bicarbonate of Potash.—When carbonic acid gas is passed in a solution of carbonate of potash, the salt combines with an equivalent of carbonic acid, and becomes a bicarbonate. This salt is inodorous, colourless, and crystalline; has scarcely any alkaline taste, and acts feebly upon turmeric paper: the prism is a right oblique-angled prism. It is not altered by exposure to the air, requires four times its weight of cold water for solution, and by boiling 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
- One equivalent of potash
- One equivalent of water

Equivalent: 101

It is largely employed in medicine and in chemical investigations.

Sulphate of Potash is an artificial salt: it is seldom prepared by the direct combination of its constituents, but is readily obtained by the addition of the acid either to potash or to the carbonate of ammonia in the presence of sulphuric 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 is a white amorphous mass, which is pungent, insipid, astringent, bitter, and rather hard; water at 60° dissolves only one-sixteenth of its weight, while 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 dehydrates, losing 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—

One equivalent of sulphuric acid . . . 
One equivalent of potash . . . 

Equivalent . . . 

It is now little employed in medicine; but it is used in the manufacture of album, and as a residue is often decomposed and converted into carbonate of potash.

Bisulphate of Potash is produced during some 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, this solution reddens 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 . . . 
One equivalent of potash . . . 
Two equivalents of water . . . 

Equivalent . . . 

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 used in the manufacture of certain substances.

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.

Bismuthate of Potash, Cream of Tartar, or Tartar.—This salt is obtained by the purification of argol, 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 redissolves 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 . . . 
One equivalent of potash . . . 
One equivalent of water . . . 

Equivalent . . . 

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 tartarate of potash; this salt is 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, oxalate, and oxinale; 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 bittersweet taste, and is soluble in about ten parts of water.

It consists of—

Two equivalents of oxalic acid . . . 
One equivalent of potash . . . 

Equivalent . . . 

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 alkalis or their carbonates. They produce a precipitate in the solution of chloride of platin. 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 a solution of potash causes no precipitation till 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. Occasionally precipitation in solutions of the neutral salts of potash, as the nitrate, sulphate, and chlorate.

POTASSIUM, or POTASSA. Medical Properties of.
The preparations of potash which are employed 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 potash with linseed oil; solution redness 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 . . . 
One equivalent of potash . . . 
Two equivalents of water . . . 

Equivalent . . . 

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 used in the manufacture of certain substances.

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.

Bismuthate of Potash, Cream of Tartar, or Tartar.—This salt is obtained by the purification of argol, 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 redissolves 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 . . . 
One equivalent of potash . . . 
One equivalent of water . . . 

Equivalent . . . 

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 tartarate of potash; this salt is 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, oxalate, and oxinale; 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 bittersweet taste, and is soluble in about ten parts of water.

It consists of—

Two equivalents of oxalic acid . . . 
One equivalent of potash . . . 

Equivalent . . . 

POTATO (Solanum tuberosum, Linn.). 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 Harriott (afterwards known as a mathematician), who accompanied the adventurous squadron, transferred to England the description of a plant called Operaack by the natives of that part of North America, which the courtier-like gentleman of Raleigh had named Virginia.

Harriott described the Operaack as having the roots round, 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 repeated the information 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 thus recommends it as a basis 'to 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, they should be boiled with prunes.'

Vol. XVIII.—3 O
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 Southwell, who planted some of these vegetables in his garden at Youghal, 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 obtained the potato plant at Youghal 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 authentic.

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 the same potato, through the name of which we call our plant openakw, those of the south, more particularly the inhabitants of the mountains of Quuito, called it papas, which the Spaniards corrupted into batatas: this again their neighbours in Portugal, softened into batatá (da terra), to which po-ta-to is a very close approximation.

The potato was cultivated in Ireland long before its introduction into Lancashire, which was owing to a shipwreck, it is said, at North Meols, at the mouth of the Ribble, where the potatoes were what is called productive, and as usual spread through every portion of Great Britain. It was not however until after a considerable time that it was generally grown. In the north of Scotland, whence the culture of this important plant has gradually spread through every portion of Great Britain.

It is not wonder however to consider that it was grown in Ireland even by the people, who in the year 1725-6 the few potato plants then existing in gardens about Edinburgh were left in the same spot of ground from year to year, as recommended by Evelyn: a few tubers were perhaps removed for use, but the parent plant was well covered with litter, to save them from the winter's frost.

A strange objection to potatoes was urged by the Puritans, who denied the lawfulness of eating them, because they are not mentioned in the Bible; but who would view this vegetable with reference to its adaptation to every soil and almost every climate, as or a great source of food and nutritive properties, it must be ranked among the best gifts of Providence.

Though the plant may be propagated both by its seed and tubers, practical management has confined the cultivation to the latter mode, except for the purpose of raising new varieties or renewing old ones. Those who are curious about varieties will find a few interesting, and almost indefinitely pursue their object; for the seed of a species, the red apple for example, will sport, and this too without hybridising (that is, without the admixture of its seed with that of another species). The produce of the seed might be hybridised into numberless varieties of form and colour—round, flat, oblong, red, pink, black, white, mixed, and purple, of every shade and colour. These, whether hybrids or not, are reproduced through successive seasons by the tubers alone, if they possess those qualities which render them desirable for continued cultivation, on account of peculiar adaptation to early or late seasons, size, predominance of farinose, &c.

The mode of propagation by tubers either improves those qualities or gradually develops objectionable properties. Some varieties are therefore permanently established, while the culture of others is either abandoned, or, if continued, it is known that those varieties revert in the course of a few generations to the nature of their parent kind, and therefore cease to constitute a variety.

In the vegetable kingdom, hybrid plants have not the power of propagation by seed; but they can be rendered reproductive by budding and grafting, or by means of cuttings, slips, and tubers, and in this respect, and others, are more valuable than potatoes. They are not endangered with occasional trouble and confusion in the field management.

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 hands. The apple should be reserved 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 should be placed in a warm, inurn, or a greenhouse, or in the vegetable gardens, which are suited to the raising of half-hardy annuals. The plants, when an inch high, should be pricked out into other ves-sels, and placed in a temperature somewhat lower than before, until inured to the external air. They should be exposed after frosts have ceased. These plants should be put in drills sixteen inches apart, and 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 the following seasons.

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, from 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 time from the end of January to the middle of March. Cover the drills with some of the mould, which had been thrown out in forming the drills, by the rake, to within four inches of the surface of the earth, except where the furrows 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 the surface, till the shoots are 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 frosts.

This management alone will be found successful, except perhaps in very tenacious clay soil, in which the rains of winter may lodge so near to 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 ash, chalk, or calcareous gravel.

The germination of the sets may be accelerated by a little management previously to their being planted, by laying them on the ground in a warm and sheltered situation, 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 care as possible) and carefully placed in the drills prepared as directed, and covered with well-rooted 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 way of state they are neither wholesome nor palatable. Next in early maturity to the ash-leaved and walnut-leaved are 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 as possible before winter, and early in March harrowed, and well tilled. After lying in this state for two or three weeks, it should be as well harrowed and very deeply ploughed twice, without bringing up any bad substratum, and it will then be fit for the potatoes. In early spring, the nursery operations. The dung is then to be carted out, and divided by the cart with a drag-fork as his horse and cart move forwards (the horse walking in the centre of three drills while the wheels move in the other two), in such quantities as can be most conveniently shank out into the drills by 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 beds and draw the horse in between, and raise two or three right rows apart, and to supply the drills from the heaps as the plough advances in its work, reserving just as much as is supposed sufficient for the concluding drills, which are to be made in the sections of the field previously occupied by the rows of manures. By the arrangement the manure may be laid over the sets—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 seed. But against this plan, and the manures which is not inconceivable—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 ploughmen of preserving the exact breadth in those drills.

Some avoid any perplexities in those respects by ploughing in the manure thoroughly before digging, and either dropping the set in every third furrow, or rolling the whole manured and ploughed surface, and then making drill. 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 plopping of the lazy, and many landowners by this method are so generally condemned that any explanation of it here would be superfluous, yet in undrained bog-land, or under any circumstances in which a redundancy of wetness is probable in the autumn, as on low marshy lands, or stiff chine, in the swamps of low country, or in water, and are 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 lazy-bed system. Surveys and experiments preclude the practicability 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 or 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 latter, and to consider all the probable circumstances from an essay on 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.

(Agricultures (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 setters, who move in a retrograde direction, and are provided with spools 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 lightly to plow the soil.

The roller is next used to lay an even surface to the barring plants and to facilitate the subsequent progress of the paring plough, which is to be set to work when the stems are seven inches high, but in England 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), and for the third, the common hoe with the star; one man will hoe out the weeds and loosen the soil of half an acre per day, and the subsequent earth-

ning 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 headriggs; 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 practice would soon give sufficient dexterity in the use of the hoe.

As to the distance between the drills, due regard must be had to the natural quality of the soil and the quantity of manure available. It cannot be otherwise than that 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 row 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 sorry 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 that case less space from the soil to the leaves," and consequently strong and upright stems, which do not fall down and shade the others, are those which are desirable.

Two more earliness are usually given, but it is questionable whether the greatest produce will be obtained in soil of average 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 ridgelet form, it is applied where it is useless for the nourishment of the tubers, and in a position that will disturb the natural course of their growth, which ought to be an object of caution. In deep land, more 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 not affording (or a very slight) give to the soil, as the earth, instead of being washed from the drill, may be ploughed directly on to the roots. In this mode of treatment, the soil is much more and inconsiderable to those who have not followed their rambifications, 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 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 most efficacious implement in the first course of treatment after the plants have well taken root. 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 preceding instructions, the hand-hoe should be 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, the hoe and spade are the ordinary labourers' allotments, who besides the plough altogether,
POT

468

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 row of seed-horses respectively into the drill, begins a little nearer the next spit, 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 they remain in the manure 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 flowers in the early stages; 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 crop is fully ripe, 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 set 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 prevent the pot injuring the men. The pot is cleaned for the pickers, who are also stationed at exact distances with a basket between every pair, into which they gather the potatoes.

The harvest of the plough may be employed in three ways:—First, in taking off a slice from each side of every drill, 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 most expeditiously and easily done if the earth be in fit condition. Second, a double mould-board plough with a long saxon, and divested of its coulter, may be drawn by two strong horses through the centre of the drills, and completely cast up the ploughing, so as to avoid injuries, from which means the work-people will be kept exceedingly busy; and if the land be in good friable order, this is the most expeditious mode, and provided there is a perfect harrowing 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 headers under the crop, also, it is the most desirable, effectual, and economical mode. In removing the produce in this manner, it is obvious that the number of gatherers should be much less in proportion to the man, than under the other circumstances. The plough should cut for the first part of the field cleared, to make a free space for the ploughs in the buttings and for the carts.

One horse will answer for three carts if the distance of drills is not too great, but by changing from an empty to a full one, this but only applies to the Scotch and Irish system of draught by single carts and horses. The general mode of securing the crop in this field is the safest. In making the pits—improperly so termed, for the base is only a few inches, and the potatoes are raised considerably in the heaps—the only caution to be observed is that fursrows should be cut on all sides to prevent water from lodgin6 or penetrating inwards, and that the drain of earth thus left to the surface should be two or four 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 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 unpleasing speculations: the cause is yet unknown. One thing however is clear, that from 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 been assailed with essays as very profound and mysterious. The belief that it was remarked for many years, as appears 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 when cut, looks white, but, if polished, is often seen to be black and rotten away, or has feebly and partially thrown out its sickly shoots. The most contradictory causes have been assigned: over-ripening in the preceding year; under-ripening; disease; formation of the seed in the ground when 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 air and furious manure, severe frost, which is always damp; exhaustion of the kind 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. In the fermentation cannot be avoided, even in the majority of cases, 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 succeeded, while those put into the other were 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 rather stimulate them by their warmth, and excite their growth by the aliments which their essential qualities, carbon and ammonium, supply to plants. Why do not the gaseous exhalations from rank and fermenting hot-beds destroy the tender plants which are used in them? (Doyle'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 observed, 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 preventive 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; whether it arises from atmospheric influence or instability of the culture, but in the first place, it is from the causes, the entire tubers resist these noxious influences, and germinate healthily and freely. All reports agree on this point; there is no risk in this, if the tubers be sound and without blemish. In all stages of their growth, the uncut tubers maintain a decided superiority and yield a corresponding produce.

The farin of the potato, properly granulated and dried, is sold in our shops as tapioca, to which it bears the closest resemblance both in appearance and essential properties. For confectionery the flour is so delicately white, and it is so digestible and nutritious, that it ought to be in more general use, among the children of the poor especially, in the form of thickened milk; and the cost is not more than a sixth or seventh of the price of tapioca or arrow-root, if it be made at home. Few housewives are ignorant of the method of obtaining it by the use of a common hand-grater and sieve; but for yielding large quantities some mechanism is necessary.

POTEMKIN GREGORY ALEXANDROVITZ.

PRINCE, born near Smolensk, of a noble though poor family, entered the army at the age of eighteen, and obtained a commission in the Russian service. His promoztion took place at Petersburg, in 1762, by which Peter III. was dethroned, and his wife Catharina proclaimed empress of all the Russias. Potemkin took the part of Catharina, and with great ability defended her throne: he was indebted to her to his advancement in the nobility. He was deeply noticed by Catharina, and after some time he became her favourite. But he had better claims to favour than mere personal attractions, for he had great natural abilities, comprehensive ideas, and
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 often they blamed him for the quiet of the court. He was probably 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 man peculiarly endowed of success in his profession. In the Crimea and Kuban 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 Hawelius, czar or prince of Georgia, to do homage to Catharina, and in 1783, he was created a grandee at St Petersburg.

He also induced Sultan, the son of Imiretis, to do the same. Lastly, he took advantage of a dispute with the khan of the Crimea, which had been acknowledged as an independent power, to bring the Moldavian and Wallachian, under the protection of Catharina, 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 Taurischsky. Conformably to this name, the magnificent palace which Catharina had built for him at Petersburg was styled the Taurian or Taurida palace. In 1787, he was appointed to the governance of the Crimea and Kuban. The Russians occupied Moldavia, Bessarabia, Wallachia, and part of Bulgaria. In 1791, Potemkin left the army, and returned to Petersburg 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 pleasures of the moment. 3 September 1793, he was granted an annuity, and then retired, to return to Petersburg to express her satisfaction, when the prince fell on his knee, and seized her hand, which he bedewed 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 Petersburg 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 among the host. He was perspicacious and a subtle epigrammatist. The following is a list of his titles and offices at the time of his death: he was field-marshall of Russia, chief general of the cavalry, grand-admiral of the Euxine and Caspian seas, governor-general of Tauriada and Bessarabia, grand-knight of the order of St George, grand-master of the order of the Holy Spirit, grand-chancellor of the empire, count of the palace, major-general of the army, grand-hanetman of the Cossacks, 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 satisfied with every kind of excitement, and was one of the French jurists, who could not believe a man ever to 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 more marked.

POTENTILLA (so called from its potency in medicine, of some of the species, especially P. reptans, having been employed as astringents) is a large rosaceous 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 they are purple. They are cultivated on account of their ornamental appearance. As a genus Potentilla differs from Fragaria (or the strawberry) in nothing except the receptacle of its fruit being dry and hard, in shape like a large potato, and in length much enlarged. Such of the species of Potentilla as have fragrant leaves are popularly called cinquefoils.

POTERICINNITSES. [ENCRIENTS, vol. ix., p. 591.] N.B. In Mr. Murchison's great work on the Silurian System, fig. 67, vol. ii., p. 68, we first saw a new and most curious genus. Mr. Sedgwick describes and figures a new genus of Encrinites under the name of Hypanthochinices, observing that in it the lowest plates clearly seen appear to correspond to the first costals of the genus Actinostreps, and that the plates are probably a small column. He thinks it 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. Quadre tamen.

POTHIER/.../JACQUES (1658-1749) at Orleans in 1699, studied in his native town, and adopted the profession of the law. He was made counsellor at chatelet (court) of Orleans, and was afterwards appointed professor of French: he was a man of great learning. He was an intimate friend of the chancellor D'Aguasanchez and is considered one of the most distinguished civilians that France has produced. Pothier wrote many professional works, but he chiefly devoted his labours to extend the study of the Roman law. With this view he published his edition of the Digest, which is entitled 'Pandectae Justinianae in Novum Ordinem Digestae; cum Legibus Codicis et Notulias quaus Pandectarum confirmant, explicant, aut rectificant,' 2 vols., Paris, 1749. This edition was intended as an introduction 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 Pandectes, 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, 1782. Other editions of Pothier's works are numerous. There is one with a French translation by Bréard Neuvile and Moreau de Montignin, Paris, 1810.

Pothier was the author of numerous treatises on various branches of Law in French. One of these is' Traité des Contrats Altéristes', '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 Société', 'Spécifications', which has been translated into English, with the following title: '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 'Traites sur Diferentes Matières de Droit Civil appliquées à l'Usage du Barreau et de la Jurisprudence Française,' 4 vols., 8vo., Paris, 1823.

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. Lefol, a French civilian, entitled 'Le Pothier des Notaires, ou Abrégé de ses divers Traités, avec l'Indication de ceux des Arnaud, que ce dernier a retrouve les 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 jurists, and that his work has had the 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 not surrounded and overshadowed by the highest object of pity.' (Vom Beruf, &c., p. 60.) The treatise on Contracts, which is perhaps the best known of Pothier's works in 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 "Le Droit des Indiens," which is one of the most complete 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: "Oeuvres Posthumes de R. J. Pothier," 3 vols. 4to., Paris, 1777, and subsequent editions. The work was also published as "Le Droit des Indiens." It contains a list of his "Dontations Testamentaires," "Des Donations entre Vifs," "Des Cens," "Des Fees," "De la Procedure Civile et de la Procedure Criminelles."

It is not clear how his learning was enlightened by a strong sense of justice, morality, and religion. He never sanctioned any of the unjust and cruel practices of the old French judiciary system, such as the torture. In his treatise "De la Procedure Civile," he endeavored to establish a sound custom which existed in his time in France, and still exists in some European states, of obliging the accused, 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 repudiated by many divines and moralists, and which appears to be borrowed from the code of the Inquisition."

POTOI, MARYLAND, VIRGINIA.

POTOMAC.

POTOMI, Mr. Swainson's name for a subgenus of Dr. Turton's genus Myoxa, placed by Mr. Swainson in the subfamily Umincerinae, family Umicerinae. (Mammalogy.)

POTOSI, a town in South America, in the republic of Bolivia, and in the department of Potosi, is built on the south-western declivity of the Cerro de Potosi, in 19° 30' S. and 62° 48' W. altitude, at an elevation of 13,292 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, contained, in 1826, 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, the streets lead from the government house, through a 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 surplus is scarce and charged at enormous prices. The Indians live partly on potatoes. 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 afternoon is like the finest weather, and at noon the sun is at its meridian, to the great discomfort of the inhabitants. At six 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 zorochi, to which even the natives and animals are subject.

The Cerro of 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 lama 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 823,950,505 Spanish dollars, or 185,388,864.

The greatest production was in 1573, when it amounted to 7,652,000 pesos. In 1652, in the middle of the eighteenth century the production began gradually to fall off. A few years previous to the War of Independence the production was still about 8000 mares (4000 pounds avoirdupois) of fine silver yearly, but during the war the mines were destroyed, and in 1826 Temple estimated the annual produce at 125,000 l. only, or 1200 mares weekly.

Humboldt, "Essai sur la Nouvelle Espagne." Temple, "Travels in various Parts of Peru."

POTOSI, SAN LUIS DE. [MEXICAN STATES.]

POTS DAM is one of the two governments which form the province of Brandenburg, in the northeast of Germany, consisting of the city of Berlin, which, through only 29 square miles in extent, 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 by Westphalia, on the west by the Rhine, on the south by Hesse-Cassel, on the east by the Prenzlau, and by 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 (1807) 1,169,768; that of Berlin is 265,304.

This tract is an extensive and low plain, varied only occasionally by slight elevations. The soil, though for the most part a light sand, contains some fertile spots, especially on the banks of the rivers. The climate is generally healthy. The principal river is the Havel, which is boggy and does 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 12,258 inhabitants in 1807, and Charlottenburg, 6376 inhabitants; Neuwied, 7415 inhabitants; Wittstock, 6113 inhabitants; and Spandau, 6753 inhabitants.

POTS DAM, the capital of the government, the handsomest town within 50 miles of Berlin, next to Berlin, is situated at the confluence of the Potsch and the Havel, on an island about 18 miles in circumference, formed by the Havel, some small lakes, and a canal. It became the occasional residence of the kings of Prussia at the beginning of the seventeenth century, but it is indebted for its chief improvements to Frederic II., before whose time the old town consisted of only four streets. Frederic built almost the whole of the new town, and had several of the new streets made to look like the towns in France. All the streets are regular and broad, and there are some good squares; but the whole is on large a scale for the population, and in the absence of the court, or when the garrison is reduced, the town seems surrounded by a rampart, and has nine gates, of which the Brandenburg gate is a handsomely triumphal arch copied from the arch of Trajan at Rome. Of the seven bridges over the Havel, the most famous is the Sanssouci bridge, which is 600 feet long and 30 wide, and consists of 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, the largest and finest in Europe, was begun by Frederic 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 electors Frederic William and of kings Frederic I. and Frederic William 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 boric ons, and a large building 660 feet in length and 75 feet in breadth, for exercising the 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 paper, the manufacture of the linen, hemp, and woollen manufactories, hosiery, musical instruments, and carriages. In the manufacture 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 Branauhberg with agreeable promenades; the Pfaueninsel (Island of Peacock)
in the river Havell, 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 colony Alexander-West, established in 1826; and the Russian colony Herrenhof-West. The latter is situated between the river Havel and the town of Berlin. It is a landscape with numbers of trees and figures. The scene is a view near the Havell, and the picture was painted for Van Sinigrub, in whose possession it remained till 1790, when it was bought by a collector and taken to Paris, and was afterwards sold to Mr. Crawford of Rotterdam for 1300£, at a public auction in that city. The size is 1 foot 6 inches, by 1 foot 8 inches wide. It has many marquises and crouching figures. 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 Fitzwilliam Museum. It is described and executed with surpassing truth and character, and gained for the painter the title of the Raffaele 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 his pictures ensured the greatest fidelity to nature. Like other Dutch painters, his subjects are sometimes grossly offensive, but in all his canvases he is always correct. His brains are neatly drawn, and he has a remarkable power of expression in his colors. There are many beautiful etchings by him executed in a masterly style: some are marked Paulus Potter j. f., and others in. p. f. and l. f., and a great number of his designs have been stylistically etched by Mark de Bye. (Bryan’s Diet. ; Pulleyn’s Dictionary of Artists.)

POTTER, JOHN, D.D., born 1674, died 1747, an eminent prelate of the English church, was born at Wakefield in Yorkshire, where his father, Mr. Thomas Potter, was a linen draper, and educated in the grammar school of that town. At the age of fourteen he entered as scholar 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 gained much notice from his classical studies, though so very young, was encouraged by Dr. Charlett, the master of University College, to publish a collection which he had made of various readings and notes on the treatise of Plutarch, De Causis, &c. This was published in 1694, and was soon followed by a similar work, named, various readings and notes on an oration of Basil. His greater works soon followed: his edition of Lycephorion, and his ‘Arcaecagoria Graeca,’ or Antiquities of Greece, both published in 1695, and increased in a subsequent period. It was said that these could have been produced by a young man scarcely past his twenty-third year. His Lycephorion was reprinted in 1702, at which time he had gained a considerable reputation, as appears by his being elected president of the ‘Grecian Antiquities’ soon became and still continues to be 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 ‘Theasaurus’ 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 preference in the church to another till at last he reached the highest dignity. Archbishop Tennison made him a chaplain in the chapels at Lambeth and Chelsea, and afterwards at St. Paul’s, retired to the abbey of Westminster and Kent, and subsequently other preferment 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 was the period of his influence and power. He was president of the Marlborough 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 principal work was the ‘Vindication of the Vicar of Bray,’ 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 volumes. 1723.

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
Scarning in Norfolk, prebendary of Norwich, and vicar of Lowestoft and Kessingland, in the diocese of Norwich. He died August 9th, 1857, in his eighty-ninth year.

Potter published a volume of poems in 1774, and translations of Hesychius in 1777, of Euripides in 1781-82, and of Sophocles in 1788. Of these translations that of Hesychius is the best, and perhaps the work which has been regarded as good as good a work of the time, a 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 Exsulation' from Isaiah, x, 44, xiv, 7, 8; and 'A Sermon on the Thanksgiving for the Peace, 1802.'

**POETRY.** 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 fusible, but that when silica is combined with alumina, 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 alkaline 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 gums. When these clay materials are free from metallic matter, a perfect porcelain is thus produced. It was found that seven parts of silica, five parts of alumina earth, and two parts of an alkaline earth, would produce such a body. On this principle, the Germans and French manufactured 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 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 pottery as carried on in Staffordshire, where the trade has long been cultivated to great extent, and now affords subsistence to a population of seventy thousand persons.*

The materials for earthenware are reduced to the consideration of six, which are divided into two classes, 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 Dorsetshire, to which is added ground flint, which gives whiteness and solidity to the goods. For the better kinds, a portion of China-clay, or decomposed felspar from Cornwall, is added, together with a small quantity of ground white granite. The density of the mixture is increased by a 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. They are mixed by being blended 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 measure, but his calculations are formed upon the known weights of the several clays that he is using. The mixture is made in a vat, the sides of which are perfectly vertical, and the quantity of each material to be used is marked by notches on a rod or gauge-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-board. The whole is now thoroughly incorporated, and it is lifted by a pump into a vessel, from which it descends, through a tap, into a silk sieve, which is kept in constant oscillation 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 until the mass is brought to a proper consistency for working; but, as 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 vigilance on the part of the potter. Ruinous losses have often been suffered through want of attention to this department, and the error has been detected until the mass is formed, when the circumstances of the glaze peeling off, or the body of the ware splitting, warns the unfortunate manufacturer to look at 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
- China clay... 27 10
- Flint... 20 17
- Cornish granite... 3 2

**Drab-coloured Ware** is made of the fine grey marl found between the coal strata, which burns to a cafe-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 marble... 32 or 56 or 56
- Dorset clay... 23 24 26
- Cornish granite... 45 44 24 25
- Oxide of nickel... 17
- Manganese... 3

The granite in the above bodies gives great density and a very close flinty fracture.

**Droog 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, asumber, calcined coopers, bobe, &c.

**Brown**—Red clay... 53 or 60
- Dorset clay... 20 30
- Flint... 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, with which it maintains their unrivalled excellence to the present time.

**Jasper bodies.**
- Sulphate of barytes... 48 or Carbonate of barytes 34
- China clay... 16 China clay... 15
- Dorset clay... 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 from one-third of a part to one per cent., of oxide of cobalt, according to the strength of tint required; or a green Jasper may be produced by staining with protochrome of chrome.

A body called turquoise has been manufactured to a great extent for a few years past. It is nothing more than a fine white 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.

These bodies are produced by a proper combination of metallic oxides, either existing in earthy 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 finer glazing masses.

Having described the operations of the slip-house, we proceed to those manipulations by which the clay is formed into vessels. Round articles, which may be turned upon a lathe, have two given to them, one by the thrower's wheel, which is late with a vertical spindle, having a small round table on the top, at which the thrower sits. He receives the clay
poured to the proper size by a woman, called the baller, and throws it 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 to a globular shape: the model is placed in the center of the cake, until the whole mass has been drawn into a circular 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. It is then divided into the parts and places 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 thrown, a groove is fixed so that its point just touches 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 a lathe similar to that used by wood-turners. The turner dexterously 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 has 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.

Casting is resorted to when a mould is so intricate as to be difficult for the workman to fill by pressing. Slip clay is then poured into a mould prepared by pouring slip clay into the slip-house, where they are blended with new clay, the ductility of which is much improved by the mixture. The turner frequently ornaments bowls, jugs, &c., with a coarser, or a finer slip, which is sometimes blended 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 and spouts are then passed to the handler, who 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, 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 ware by workmen, who, having carefully adjusted each figure to its place, run a little water under it with a camel-hair pencil, which unites it to the surface of the pot. Goods of an oval or angular shape, which cannot be turned, are made by pressing clay into plaster moulds, which are afterwards cast out. For this purpose the mould is made in two parts, and each is separately filled by laying in a cake of clay which has been beaten out to the proper thickness on a wet plaster-block; it is then rolled into a ball, and the hollowed out from a barrel of wet sponge, then squeezed into all the angular parts with the fingers, and smoothed with sponge, wet leather, and horn. When both sides of the moulds are thus lined with clay, they are joined together, and the man lays a roll of clay along the inside of the joining, which he works down until the whole is smooth and solid. The mould is then carried into a stove-room, and when the mould has absorbed the moisture, so as to release the clay, the work is then carefully taken out, and the empty mould returned to the stove previous to being filled again. The seam which remains on the outside of the vessel is removed by scraping and burnishing with wet horn; the handles and other appendages of this branch of the trade is called hollow-ware pressing or squeezing.

Flat-ware pressing is performed, on the contrary, by giving the shape to the goods by moulds which fit the trims of the vessel; plates, dishes, saucers, cups, and hand-basins are made on this principle by the English potter, with a dexterity which must be seen to be understood, and which excites the surprise of foreigners more than any other part of the common manufacture. The method is followed with a whirling-table similar to the thrower's, but which has its motion given by a horizontal pulley or jigger, which is turned by his young assistant. Close to his left hand is a dandling, or wet wheel, by which he works the clay from which he is working; immediately behind him is 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 beats out thin P. C. No. 1162.

POT)

upon his block by a stroke or two of his boller or plaster-mallet, and polishes it smooth by pressing 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; he quickly pours the clay upon the mould, and as it whirls, presses it down close with his hand: a modiller, or earthenware tool which gives the form to the bottom of the plate, is pressed upon it as it revolves, the superfluous clay being cut off by a wire: the boy instantly catches hold of the handle and starts his jigger in motion, carrying the plate into the stove, places it on a shelf to dry, and returns with an empty mould; by which time his master has his clay prepared for another plate. Thus the operation is continued during the whole day, this small and untrained 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 moist 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 workman to fill by pressing. Slip clay is then poured into a mould prepared by pouring slip clay into the slip-house, where they are blended with new clay, the ductility of which is much improved by the mixture. The turner frequently ornaments bowls, jugs, &c., with a coarse slip, which is sometimes blended 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.

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 is a cylinder of fire-brick, hooped with strong bands of iron, &c., the ordinary size in Staffordshire is fifteen feet in diameter, and about seventeen feet high, inside measure. Nine fireboxes or moulds are built round it, from which short chimney-sea are raised; these the chimney-men fill up, and the flames, are ranged from the mouths under the earth 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 as possible, though the internal 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 the others are placed in the inner ranges. If such a temperature is not obtained, 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 from a ball of wet clay, which, when it is dry, and the 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 are reduced to a black, through the intermediate tints, to a deep black: the well prepared clay can thus ascertain the state of the oven, and accelerate 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 the proper colour; 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 or twelve lbs. of coal. After the fire is well started, the fireman looks to his pyrometers, and according to the progress of the completion. When the oven is cooled, the doorway is opened, the saggers brought out, and their contents submitted to a rigid scrutiny: all cracked and crooked pieces of the goods are rejected; the well-shaped, round, and healthy goods, which do not occasion the fireman to lose his work, such bad articles not being paid for, 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.

Vol. XVIII—3 P
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-paper, sagger, and coals, 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 re-engraving. The method of working a print is made out as follows: the litharge, resin, salt, and sulphur are heated; every printer has his favourite recipe for making this tenacious oil, which is the vehicle of the colour to be used.

\[\text{Lilac, of smalls 2 parts, manganese 1.}\]

\[\text{Brown, zaffre 2, litharge 2, antimony 1, manganese 1.}\]

\[\text{Brown, manganese 12, litharge 2, flint 2, glass 1, borax 1.}\]

\[\text{Orange, litharge 6, antimony 4, oxide of tin 1, oxide of iron 2.}\]

\[\text{Pink, subcarbonate of tin and carbonate of lime, equal parts.}\]

\[\text{Green, oxide of chromium. The tints varied with cobalt or tin.}\]

\[\text{Black, red lead 60, antimony 25, manganese 15, flint 5.}\]

\[\text{Tinted together; then add oxide of cobalt 40, oxide of tin 5.}\]


The colour having been ground very fine, the printer blends it with his oil upon a hot stove, and then applies the engraved plate, taking off the impression by the common method. The transfer-paper is then 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 absorbent, holds it with great tenacity. The transferer 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 greasy paper is 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 in a large muff, 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 painters, who lay the colours on in gum-water, in which case the firing in the muff is not required; but the choice of colours in this kind of painting is rather limited, as the heat of the glaze would be destructive to the finer points of the technical action of the materials of which the glaze would be of no use, and 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 oxide of iron, when the ornamented biscuit is coated with the glaze. This glaze is blended 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 printer; if not sufficiently soft or fluent, the glaze is deficient in brightness, and are rough at the edges; if too much, the glaze runs down unequally, and is apt to craze. The glaze also requires to be adapted to the body with which it is to cover, and to the colour of the ornaments. Blues require a glaze which will supply oxygen, to bring the cobalt 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 glazed at a moderate heat.

\[\text{Cream-colour glaze.—White lead 66, Cornish glaze 22, flint 12.}\]

\[\text{Printed ware glaze.—White lead 43, Cornish glaze 28, flint 13, glass 1.}\]

In most cases, 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 calcination into a frit, or incipient glass; by this practice, a more complete combination is effected, a thinner coating is obtained on the body, and in consequence is less liable to craze with change of temperature.

\[\text{Fritted glaze.—Cornish granite 30, flint 16, red lead 25, soda 12, borax 17. Mix, and calcine in the easiest part of the glaze-oven: the glaze is ready when the stone is firm, and the frit 26. Cornish granite 15, flint glass 10, flint 9, white lead 40. Grind the whole with a little oxide of cobalt, to increase the whiteness.}\]

\[\text{Drab ware glaze.—Litharge 56, Cornish granite 20, flint 24.}\]

\[\text{Blue glaze.—Flint 40, borax 24, red lead 16, Cornish granite 7, soda 5, oxide of tin 5, oxide of cobalt 3. Calcine it together, then grind with the addition of a little pearl ash.}\]

\[\text{Green glaze.—Dissolve six pounds of sulphate of copper, and precipitate it with a solution of borax; to which add 10 quarts of white glaze.}\]

\[\text{Yellow glaze.—Colour a white glaze with king's yellow, to the depth of tin desired; or chromeate of lead.}\]

\[\text{Black glaze.—Red lead 74, flint 14, manganese 10, protoxide of iron 2.}\]

When the goods have been dipped in the glazing mixture, they are dried, and placed in saggars, 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 would adhere together. Some parts of the glazing are made of triangles, stilts, pegs, &c. are adopted for the purpose of preventing adhesion; while the saggar is so filled that there may be no room lost. The glazing-oven is much smaller than the biscuit-oven, being about 13 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 in baskets to the glazed warehouse, where it is again subjected to a close examination, every piece is sound and all the projections of glaze occasioned by the cockeys are clipped 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 West India, and the Levant are largely supplied from the Staffordshire potteries. [EARTHENWARE.]

Porcelain is a finer species of pottery, in which the ingredients are more delicately mixed than in the porcelain described: 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 flint, generally fine sand, kaolin, or china-clay, and felspar; sometimes the felspar is omitted, and a small quantity of seicente, or carbonate of barytes, or stronbitum, is used in its place.

Hard China body.—Kaolin 67, felspar 14, sand 12, seicente 4. The mixture 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 ribulous, and opaque. In this state it is dipped in the glaze, which is felspar, ground fine, with the addition of a little alkali. Some prefer a mixture of felspar and broken china ground together. 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 paste, and is produced by a lapis niger. 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 crack, and break, and the saggars will fall. Ordinary English and German 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.

* * *

Cerise choco 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 flint-powder, &c.; and then glazing in the second oven at a lower temperature, so as not to endanger the melting of the glaze. The union between the body and the glaze is however more complete than in earthenware, the glazing-flame being much more intense. Bones calcined and ground are largely used in the manufacture of English china, combined with aluminous and other 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 an entirety, which, when the bones are to sink the glaze form, loses its 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 slips 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. This body is harder than the others; the following are very excellent. Cornish granite 25, soda 6, borax 3, nitre 1; mix, and fit in glass-oven; then take frit 26. Cornish granite 28, white-lead 31, flint 7, carbonate of lime 1, or a trifle less; 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 50, Cornish granite 28, white-lead 29.

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 artists, 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 manner of application of these oxides 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 oxide of cobalt, which gives it a rich purple tint; aluminate also varies its hue.

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. Green glasses, which bear a fire that destroys a copper-green, are made from protocide of chrome, varied with the addition of cobalt, lead, tin, or aluminate.

Red.—Nitrate of iron, dichromate of lead, or muriate of mangane.

Pink.—Subchromate of tin.

Rose colour.—Gold and tin (precipitate of casius) with a little silver.

Brown.—Chromate of iron or antimony, lead, and mangane.

Orange.—Antimony, tin, and iron.

Yellow.—Antimony, tin, and lead; also chromate of lead.

Bichrome.—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 smaggmound ground fine. It is a product of metal prepared with a metallic flux. Thus, gold gilded by being thrown in a melted state into aquafortis, 1 ounce; quicksilver 14 pennyweigths, oxide of bismuth 1 pennyweigths, chloride of silver 2 pennyweigths. 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 burned through, which process is performed by females with agates.

POTTO. The yellow Maucauco of Pennant, according to whom the last-named animal is *Pivera caudivella* of Schreber, is called, in the Mus. Leop. Rome, 18,71. It had a prehensile tail, and has the Kingshoy of Buffon, which Pennant describes as distinct from the yellow Maucauco, though by form and manners a proper cononimant of it.

Pennant thus describes the Kingshoy after Buffon:

> *V. Woesel* with his long and thick tail, which he can use by turning it under and under side of the inside of the legs, of a lively yellow: the belly of a dirty white tinged with yellow: the toes separated: the claws crooked, white, guttered bo-nath. The length from head to tail two feet five (French); of the tail, one foot three: the tail is taper, covered with hairs, except beneath the end, which is naked, and of a fine flesh-colour. It is extremely like the former (Yellow Maucauco); but larger in all its parts. Like the yellow Maucauco it is a prehensile tail, and is good-natured: goes to sleep at approach of day; wakes towards night, and becomes very lively: makes use of its feet to catch at anything; has many of the actions of the monkey; eats with care; runs only at night. It has a variety of cries during night; one like the low barking of a dog; its plaintive note is oosing; its menacing, hissing; its angry, confused. Is very fond of sugar, and all sweet things; will steal and steal. It walks on the front, and fly at poultry, catch them under the wing, suck the blood, and leave them without tasting them: prefers a duck to a pullet; yet hates the water.

The Kingshoy of Pennant, 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 Kingshoy must be a different animal, or at least a different species of the Olea, and known under a name. They belong to the genus Cercoleipses, Ill., a South American form. Pennant names his Kingshoy, the Mexican Woesel.

Mr. Swainson treats the Potto and *Cercoleipses cadi-colour*, the name labelled on the three specimens of *Kin-shoy* 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, which is called by the Indians *Cercoleipses pylurus* var. *Cercoleipses pylurus var. var. (pulurum.) 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 nearly all modern zoologists have been disposed to include it among 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 vegetation. It climbs like a Lemur, with agility; and Humboldt affirms it to be a great destroyer of wild bees, wasps, 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 *Ptotto* from the circle of the Lemuridea. Baron Cuvier places this animal close to the *Cercoleipses*, yet implying doubts as to this being its true situation; but his brother Frederick, with more judgment, looks on it as a passage from the *Lemur* to the *Petro*, although he thinks that its essential characters are different from either. In this opinion we perfectly coincide, because it is not only supported by facts of structure, but by other important considerations which bear upon the question. From Cercoleipses there is no difference in our passage to the Badger, through *Paradoxurus* and *Dasyurus*; so that the affinities between the orders of Quadruped and *Petro* are uninterrupted by anything known, and are found to be in union with that law of nature which invariably unites the typical and subtypical species with a metallic flux.

* * *


* § But next to the Coela* (Vespar, Storr).
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 subsis-
tence; their short wings and the weakness of their pectoral
muscles, which cause the heaviness of their flight, a de-
fectiveness 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 domesti-
cated; 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 indigenous to India, the breeder of many cele-
rated fowls established in England, has an unusual length of spur,
his natural weapon of combat. The flesh of this variety is
delicately white and of the finest flavour, the plumage brilli-
ant, and the form symmetrical; but from their pugnacious
temper, there is great difficulty in rearing even those of the
same breed; and for companionship with the general in
mates of the fowl-yard they are very exceptional for the
same cause. So pugnacious however, are the males of most
almost every variety, that they will spur even before their
spurs are grown. For the natural history and peculiarities of
the various varieties, we refer to the article PHEASANT |
we shall merely notice in this place the kinds suited to the
purposes of the farmer.

The best breed of the gallinaceous fowls is the produce of the
Dorking (Surrey) cock and the common dunghill
fowl. This cross is larger and plumper, and more hearty
than the pure Dorking, without losing delicacy of flavour or
whiteness of flesh.

The characteristics of the pure Dorking are, that it is white-
feathered, short-legged, and an excellent layer. The pecu-
larity of this established variety, which has frequently five
claws perfectly articulated (with sometimes a sixth springing
lateral from the fifth, but always imperfect), is well known.
The crossing with the Sussex fowl has however greatly di-
nished the monstrosity in the Surrey pentalacteus vari-
yity. But though the true Dorking cock, which is white, is
much esteemed, that colour is rare, and prized for the orna-
ment of the poultry-yard: speckled colours are most gene-
 rally seen with the huggler.

The Poland breed, which is black-feathered, with white
topknots, lays well, and is highly desirable where the pro-
duction of eggs for the table is the principal object; but
they seldom sit, though they cannot be considered long-
legged.

The Chittagong, or Malay, which is a very large Indian
variety, is generally long-legged, with yellow body and
core yellow flesh. Poultry used to like them for their
fine appearance and their large eggs; but as their long
legs incapacitate them from steady sitting, they are not
general favourites. One of our practical acquaintance
recommends the male produce of the Poland and Chittagong
as a good cross with the common dunghill hen, as their pro-
geny will sit.

Permentier 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 of 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 disengage them from
vermin; running water should be especially provided; for

† Translated by Mr. Dickson, author of an excellent work on poultry.
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 to avoid the change of cocks in the breeding season, for the hens require constant intercourse with them, and several days frequently elapse before they become familiarised with a stranger. The best way is to state the clotting in the evening, and give the hens somewhat of 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 hens should be protected against the wind. The male of roosting fowls should not be directly above another.

Mr. Parmentier has shown* by what arrangement a house twenty feet long and twelve feet wide may be made to accommodate 150 hens, in the following manner: The first roosting perch (rounded at the little at the upper angles only, for gallinaceous fowls cannot keep a firm hold on perfectly cylindrical supporters) should be placed lengthways, and rest on tressels 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 renewed, and another perch should be fixed ladder-wise (en échelon) above this, but ten inches nearer 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 the hens to range. When the time arrives, the hen 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, whose desire of reaching the nests, have no occasion to fly, but merely to pass from one perch 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 the hens are so few from having a regular change 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 ladder, which renders the hen's work comparatively easier.

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 be placed in it, with a little roof to cover the rows of baskets. 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 cheek by cheek, in order that the inmates, when coming out, may not startle those immediately under them; those designed for hatching should be near the ground (where instinct teaches the hen to choose her seat), and so arranged that the hens can easily enter them without disturbing the eggs.

Wheaten or rye straw is the most approved material for the bedding, being cooler than hay; the hens are sometimes so contented by it, that they take their nests altogether, in an agony of restlessness. A Dorking housewife has assured us that she once lost an entire clutch, from having, as she believes, given a bed of hay-seeds to her sitting hen. The chicks were all glued to the shells, and thus destroyed, owing, as she thinks, to the high temperature occasioned by the fermenting seeds.

For all purposes two cocks in a good run are considered in the poultry counties contiguous to London as sufficient for twenty hens; but it is found out in France, that allow twenty 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 be uneconomical, as small ones as six or more cocks, care should be taken not to have them of

-- "Dictionnaire d'Agriculture."

* See 'The Domestic Habits of Birds,' in the Library of Entertaining Knowledge, p. 115
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.

The furnace is however best 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, in which a man can creep through a very contrived orifice 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 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 lead to the expiration of the twenty-one days required for the hatching of chickens, care being taken to confine the warmth by closing up all the orifices communicating with the external air. One hundred millions of chickens are said to be thus annually produced in Egypt.

Mr. Reaumur made various experiments in hatching with fermenting dung in hotboxes, but unsuccessfully; life was developed, but never matured; the chicks were in some cases even feathered, but long before the full time they lost their vivacity, and were what is called in Egypt, '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 vital principle. In our experiments, there was a great degree of imperfection in hatching by 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 course of nature was anticipated by one 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 variability of temperature there compared with that in the Delta, where, in the autumn season, when the mamos (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 this country. Mr. Reaumur, in his mangoes, generally shows 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, but unfortunately the mango was not properly served, and consequently that experiment failed. It would appear however that the application of the Ecaecalorium machine now exhibited in London by Mr. Bucknell, the inventor and proprietor, may be successful, Mr. Bucknell asserts that his Ecaecalorium possesses 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 temperature; 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 imregnated egg of any bird, not stale, placed within its influence at the proper degree of warmth, is, at the expiration of its natural time, elicitied into life, without the possibility of failure, which is sometimes the case with eggs subjected to the caprice of their natural parent.

That chickens are thus hatched in considerable numbers is unquestionable, upwards of thirty thousand having been by that means produced in existence by this single ecaecalorium machine, nor 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 of various kinds, are very small.

Mr. 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 conditions of soil, climate, and proper buildings can at the same time be supplied.

'Tt must have struck even the most superficial observer, that the extraordinary fecundity of gallinaceous fowls is a wise and most benevolent dispensation of nature to provide 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, as to the benefits of all human labour, the rich provision of a bounteous providence is for the first time available to Europe.*

The ecaecalorium, 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 Artichokes above alluded to, will show the importance of this subject in its commercial and domestic bearings.

Mr. Bucknell observes (page 16) 'We shall, as the Egyptians barbarous, the prevailing bowman, by art and industry, an improvement of that necessary of life, good animal food, is 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 it is with that produced by nature, 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? Full one-third of our population subsist almost entirely, 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 slaughterhouses, per week; 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 saccharine fruits, roots, stalks and leaves of the olive, the seed of the olive, the olive oil, the olive-blower, train-oil, with frogs and snails, 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 poverty of the people. 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. Bucknell'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; the pulsation and 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 cartilaginous, 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 not only 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 of India, by Dr. Dicks, p. 196.

† From Ecaecalorium, I call forth, and Bicui, lili. **

* Treatise on Artificial Incubation, by W. Bucknell, Esq., p. 36.

** Ison.
The exit of the chick from the shell is naturally one of the most interesting processes of animated nature ever investigated by naturalists. It was supposed that the mother bird broke the shell; but M. Réaumur has long since detailed the processes, and we ourselves have witnessed the evolution of the young bird from the egg under the entire observation of our own eyes.

French naturalist to whom we have just now referred thus 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 place. The difference, in short, is due to the expressions of their impatience 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 twenty-four hours, and that is not the case, as long as the unportioned 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 yolk 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 that different languages are listened to by the chick in the membrane. The shells of the eggs of birds of various species are of a thickness proportionate to the strength of the chick that is obliged to break through them.

As the chick is always able, as sometimes occurs, and is indicated by the faintness of its chip, and the non-enlargement of the fracture for some hours, it must be assisted (but not until the necessity is absolutely ascertained) in its liberation with a key, or some such instrument, and by cutting the membrane with the points of a pair of scissors.

The operation, though painful to the chick, does not prove mortal; for it is no sooner freed than it exhibits as much vigour as any other chick of its age. But unless the chick is assisted, as often happens, it is impossible to chip the shell from weakness or adhesion to its envelope, it is better not to assist in its extrication; for in ninety-nine cases out of a hundred it proves ineffectual, through the injury inflicted upon the delicate organization of the bird; or more probably the previous weakness or imperfection of the chick, which occasioned the necessity for assistance, also occasions its death at the moment of its birth, and would take place if its disengagement were effected without any injury.

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 within two days of the event, and much less, with a stick. In the first case it is absolutely necessary to do so, care should be taken to place them with the broad end inclining upwards, as the break 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, griss, and barley-meal and milk: if not designed for immediate use, they should soon get raw corn, and occasionally alteratives of green food, such as bruised leeks, nettles, lettuces, &c. For some time after that they are very susceptible to chip the shell; afterwards 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 offpring during this time pass freely through the prison bars, returning at her call on occasions of alarm to the maternal wings, and then hurried out again in accordance with their unprisoned mother, who is kept in this state of confinement until she becomes indifferent to the chickens and disposed to lay again.

The conduct of the hen in defiance of her offpring 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 matronly character, she was greedy, and always afeard of losing her food, fond of gabbling 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 both of suitors and of her own young. An anecdote is told by White, in his 'Natural History of Birds,' 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 mercies of the feared moiety of his own, words: 'Resentment suggested the laws of retaliation. He clipped the hawk's wings, cut off his talons, and fixing a cord on his bill, threw him down among the brood of chickens!' Imagining, as in the case of those thatkers the expressions that fear, rage, and revenge inspired were new, or at least such as had been unnoticed before. The exasperated matrons upbraided, they excoriated, they insulted, they triumphed. In a word, they never desisted from buffeting 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 utter a peculiar whistling, that 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 more musical and intelligent language than ever. The crested cock has various notes; his tone and language, for each it is in effect, as he calls his favourites to partake of the food which he gallantly scruples for them, is very peculiar, and extremely different from his ordinary voice that is so familiar to us.

Poultry are the better for high feeding from this shell, and on this account the heaviest corn is often far cheaper for them in the end than well-grown, as regards the flesh, or the size and substantial parts of the bodies.

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 drinking purpese, they may not be kept in the 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. Moubray ascertained that pullets hatched in March, if constantly high fed, laid eggs abundantly in the autumn; and if killed in the February or March following, were so excessively fat from the run of the year as to open more like Michaelmas geese than chickens. Experienced pullets will fatten fowls in two or three weeks, if the feed of the meat and the aid of grease, which gives a luscious, but, in our judgment, a very disagreeable flavour to the flesh, which, though not actually diseased, is very inferior to that of the fowl fed at large in the common way at the barn-door. The practice of putting the feed up in the yard by hand is quite common. A machine for this purpose is used in France, by which one man can cram fifty birds 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 grain is forced through a pipe, which conveys the food from a reserve below placed on a stool. In fifteen days, fowls are said to attain the highest state of fattiness 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 poulters, some of whom give a little herring-seed to intensify the effect, that is the most effectual way of keeping them in a state of darkness, 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 raised in this manner, 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 nourishment.

The practice of making capons (emasculating the males) is practiced a little in some of the English counties, and very much in France, where the females are also rendered incase by the interposition of a piece of bread between the thighs, or poulasses, in order to give them the tendency to fatten. An incision is made near the parts, and through this the finger is introduced to take hold of and bring away the genitals, but so carefully as not to injure the intestines; the wound is then
stitched up and rubbed with oil or grease; and the comb (which appears to be an unnecessary and gratuitous pain and torment to the quails) is cut off. 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 enough air and water, and during the first few weeks, a time 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. Pullets 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.

Much care may be bestowed on hatching any number and management of all poultry. The succeeding observations will be brief.

**Turkey.**—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 of gradation is provided in the cap, the neck, the 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.')

Mr. Young calls attention to the variety of color shown in the white turkeys, and as the color is produced almost entirely by breeding, and not by any chemical means, it is probable that the variety may be increased by continued selection. The color may be heightened, and the reds and purples may be more intense, and reddish white may be produced.

'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 bound 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 will 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 as to catch his eye, and there the bird will remain spell-bound, till a bystander, rubbing out the line, or diverting his attention from it, breaks the charm. Many a fowl have we fascinated in our boyish days.'

On account of the great expense of this bird, the hatching should not be commenced too early in the spring, and when the chicks are hatched they should be guarded from the extremes of heat and cold for some weeks. Rain almost always fatal to them in their early stage. Coop, 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
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 poultrymaid, who should beware of their being caught by a shower.

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 frequent examples of the abilities of hens and cockerels to work with the soil and climate 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 large and well ventilated. They may be grown on the same ground as the fowls, or in a separate place in the yard, such as a turles-work. Fowls (which are equally unsocial with the caupon of their own kind) have a strong disinclination to root 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 it 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 from the west of Scotland in the winter, or from Norfolk, frequently weighing from twenty to twenty-five pounds, are usually cooked from the preceding year.

Great numbers of turkeys are reared in Ireland, where the climate is congenial to their nature, and no doubt the hens can be procured from quickly and cheaply hatched, the turkeys from the facilities with which poultry may now be brought to the great English markets.

Guineas Fowl.—This breed, which is not much larger than the common barn-yard fowl, is 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 hen. The flesh has a delicate taste, but is well-flavoured, as for the sake of the flesh, which is prized in the London markets when the season of pheasant-egg eating. 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.

Retaining some of their original wildness, Guineas fowl dislike the confinement of a house. For the purpose of laying, they prefer shrubberies, clover meadows, or corn-fields, in which they will deposit their eggs, which are of the size and shape of the common hen’s egg. They are more numerous during the entire summer, 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 common hens or capons, 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 her 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 pea-fowl, will destroy the eggs if he has the opportunity of doing so. If well kept, they will not be hard, the chicks break through it at the proper moment, and are soon after vigorous and ready to eat as the young of any other tribe of poultry.

The hen’s disposition is not agreeable, but, like the scream of the pea-fowl, 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 those alarms which her heart is not capable of expressing with such energy of 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 fowl and turkeys is good for the chicks of this kind; but as they are not often destined to the coop 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 deal of fat in 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 juicy than that of other poultry of the same age, and very like that of the pheasant, though ten times old it becomes exceedingly tough. [Pavoinius.]

Ducks.—The white duck, being the largest of the common domesticated ducks, is perhaps the most graceful of the poultry, though it is not deemed so delicate in flavor as the dark-coloured, such as the breed from intermixture with the Khone duck, which is also large. The Muscovy variety is said to be a poor duck. One drake is sufficient for five females. It is generally believed that ducks will lay no more eggs than she can cover (from twelve to fifteen), but Mr. Moubray 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 forty days, being then at the end of her trellis-work. Fowls (which are equally unsocial with the capons of their own kind) have a strong disinclination to root with them.

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 in a yard where there is any pond within her reach.) to the tynp, already 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 young duck and mother should be avoided if circumstances permit, for to protract her close confinement after more than four weeks sitting is a cruel restraint. It is very common to place ducks in a yard with 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 mixed with potatoes. The refuse of the kitchen will not only support but fatten them; but to have anything of the kind frequently made into paste. They will also devour any animal offal, and have no fastidiousness whatever. If allowed to follow a hawk or hunt in the garden when his spade is at work, their greediness and activity, combined with great sprightliness, extreme; 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. Ducks may be kept in the yard without a paling; they require crammintg, 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 seis) is available; on the margin of this pond they may be placed with very trifling labour, and an invisible paling all round the water, constructed at bottom on the principle of the egg-trap, so as to prevent the ingress of rats or weasels, while it affords them what is the most important part of their establishment, enough of the water to swim in. 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 ducks, 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 strong activity in the good duck (breeding season) two broods may be had in the same year. Unlike the peacock and the Guineas cock, the gander is not only disposed to do any mischief to the nests, but is very attentive to the hatching birds; he is very vigilant and protectively by his hails to 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 being necessary to remove her from her nest for the purpose.

The early treatment of the gulls or goslings is similar to

* Such may be seen at the Zoological Gardens in the Regent’s Park, London. M. Moubray.

Vol. XVIII.—3 Q

P. C. No. 1163.
of ducklings. The mother should be penned up for some days upon dry grass, but neither too early nor very late in the day; not 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 6s. to 11s. each; the two are oat-meal, peas, and skinned milk or butter-milk, when from four to six months old: many prefer oats alone.

The management of them in the vicinity of London is thus detailed in a communication to Mr. Mombrey:—

"Cleanliness, punctuality, and regularity prevail; the business is conducted, as it were, by machinery, rivalling the vibrations of the pendulum in uniformity of movement. The goose, with its 3.000 wings, is not attended, but poulted in general, for market, in as short a time as possible, is effected 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, &c., according to condition, &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.

In the same way geese, young geese, come to hand generally about the month of March, after which a regular and constant supply is made weekly throughout the season. 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. They need largely. If they be not given a liberal supply of the husk, the taste of which is not very agreeable, they will make a rule to buy the best. The Messrs. Boyle of Stratford, whose pens are capable of holding the extraordinary number of four thousand geese, independent of ducks, turkeys, &c., consume twenty censums 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 feel on the stables, where they supply themselves with the best food without paying an unreasonably high price. At Michaelmas, when antient custom renders them a favourite dish.

"Nought is useless made on the barren heath.
The shepherd tends his flock, that daily coops
Daily verdant dainties from the moony turf
Sufficient: after them the cackling goose,
Cluse grazes, flies hither to ease her veut."

"Philippus's Ode." The birds, however, 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 nutritious food, to the miserable herbage which the fields afford this season; and this constitutes their chief diet until the harvest season. Cold and wet weather 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 Liverpool and in Ireland. It is generally urged in excuse for this barbarity, that feathers are most elastic and valuable before the period of moulting, and that geese have been thus treated ever since feather-beds came into fashion. This excuse carries some weight with us, 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 counts for the greatest weight in very humane considerations.

The cramping 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 condemn.

Eggs—The most certain 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 they soon become tainted sooner than if they were suspended in the centre.

The only management, besides warm and high feeding, by which the annual succession of eggs can be obtained in winter, is by having pullets and hens of different ages, which, moulting 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. Evincing 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 Holbein, and copies from the antique. Some of his earliest efforts in painting were the pictures in the church of the Capuchins at Blois, and some Bachelian subjects for the chateau of Chivyron. At Paris he became acquainted with Luigi Caravaggio, the Italian painter 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 work rendered him with kindness for about three months in 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 reduced to the expectation of the support of a foreign city, and without the means of subsistence other than 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 him the tenth part of 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 the great classic statues and most celebrated pictures of the time. The works of Raffaello were however the greatest attraction to Poussin, and he studied them with intense devotion.

On the return of the cardinal Barberini to Rome, he liberally patronized Poussin, who paid for him himself the 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 church, which is now in the pontifical palace of Monte Cavallo. These productions established his reputation, and recommended him to the friendship of the Cavalieri 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 afterwards painted another for the Duke of Buckingham, which was destroyed in 1644 and 1647, with variations, for M. de Chantelou, which were among the principal attractions of the Orleans collection, and were purchased by the late Duke of Bridge- ton, who first fixed them up, and now are in the collection of Lord Francis Egerton.

On the return of the cardinal Barberini to Rome, he liberally patronized Poussin, who paid for him himself the 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 church, which is now in the pontifical palace of Monte Cavallo. These productions established his reputation, and recommended him to the friendship of the Cavalieri 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 afterwards painted another for the Duke of Buckingham, which was destroyed in 1644 and 1647, with variations, for M. de Chantelou, which were among the principal attractions of the Orleans collection, and were purchased by the late Duke of Bridge- ton, who first fixed them up, and now are in the collection of Lord Francis Egerton.

The celebrity which Poussin had now attained induced Louis XIII., in 1639, to desire his return to France, which took place in the following year, when he was appointed principal painter to the king, and had his lodging in the Tuileries. He was commissioned to paint an altar-piece for the chapel of St. Germain-en-Laye, where he produced his admirable work of the Last Supper, and was engaged to thất in the design of a ceiling for the Chateau of Fontainebleau. He had prepared the designs and some of the cartoons, representing the Labours of Hercules, when the criticisms of his brother-artists excited his disgust, and determined him to
P O W

depart again to Rome, to obtain leave to do which he signed a desire to settle some private matters and to fetch his wife to the farm. He never was an admirer of a determination, 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 1653, when he died, in the seventy-third 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 most himself; this is the Planation of the Philistines, he transversed 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 landscape is universally allowed, and when it is the chief object of his picture, precludes an a 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 it give him 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 classical forms. The love of simplicity, the modesty that appears to have so greatly excited his admiration as Raffaello. In the sublimity of his conceptions, he is in some instances little inferior to that great master, nor is he much less precise in the design of his figures. He is great in the grace and dignity of his attitudes, and his admirable expression of the passions. His compositions evidence an intuitive acquaintance with the true principles of art. They are simple, grand, and impressive; whilst his draperies are disposed with classical splendour, and beautifully combined.

(Bryan's Dictionary; 'Note,' by Fuseli, to Pilkington's Dictionary; Biographiæ Universelle.)

POUSSIN, GASPAR, was born at Rome, in 1613. His family was originally French, and bore the name of DuGuet, 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 land-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 pleasing manner, and his talents were increased by the 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 is placed according to its character. 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 Nicholas Poussin, usually representing some subject of history or fable. There are a few slight but masterly etchings by this 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 a pupil of the elder. (Bryan's Dictionary; Biographiæ Universelle.)

POWER (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 confuses those who attempt to study mechanics without the aid of mathematics.

The word power has obtained a technical signification which seems almost peculiar to the popular traditions. From among the numerous combinations which occur in machinery, the lever, inclined plane, wheel and axle, pulley, and screw have been selected, and named mechanical power. Some of these principles have a double application; some have asserted that they 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? No one will see 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 except some simple one; some that they are mechanised that they are losses of power. Those who deny that any of the adaptations above mentioned give power, look for their meaning of the word in the action of what are termed called agents, or in the mechanical state of the system, the force of wind, the fall of water, the expansion of steam or explosive gases. Admitting that all these agents are well entitled to the name of powers, it is nevertheless difficult to refuse power to the Planation of the Philistines, for a large crane in unloading a vessel, compare it with what the same men could do by their unaided (or rather, unadapted) strength in the same time, and it will be impossible to deny that the machine gives power.

The cause of all this confusion and diversity of opinion as to the way of stating facts which every one knows, arises from the word power being taken in two different senses, that which is true of one of its meanings being untrue of another. In the first sense a power is gained whenever any thing is done quicker or better at the same expense, or in as effective a manner at less expense; whenever the advantage gained, or the disadvantage avoided, is worth more money. In the second sense, power is gained when a new adaptation is introduced, by which an existing agent is made apparently stronger. To find different phrases for these different things, let us use the word 'mechanical advantage' for the first, which produces beneficial effect, and that power in the second sense means that which produces mechanical advantage; these last words have been often used by writers in the same sense as the technical term 'power.' Again, beneficial effect may be produced in various ways, without mechanical advantage, but the benefit, as far as it is of a physical character, will generally be found to consist in a saving of useless labour. Thus, in the division of labour, the work done, which nothing produces more of beneficial effect, there is not only the moral benefit, namely, the making the human agent fitter for his work by giving him a more limited range of occupations, but the actual saving of the labour of laying down one tool and taking up another; again, when loaded carriages are dismissed down an inclined plane and made to draw up the empty ones, there is no gain in a mechanical point of view, for the momentum which is gained by the empty carriage will be exchanged for the momentum lost by the loaded carriages is no loss, since there is no use in their delivering their contents with a great velocity, while the momentum abstracted is applied to a beneficial effect. Thirdly, a simple pulley gives a mechanical advantage without any gain, since, on one side, when the pulley is at rest, must be equal to that on the other. If we compare the effect of this machine in raising weights with the carriage of them up a ladder, we see at once a beneficial effect, amounting to a saving of the greater part of the labour. With a pulley, the labourer has not to carry himself up to the height required and down again. Fourthly, when the traces by which horses draw are inclined in a proper angle, a part of the drawing power is taken off, and applied in lifting the carriage off the road and lessening the friction, so that the diminished draught is better able to do the remaining work than if the whole draught were applied to the carriage alone. Hence we see the good mechanical sense, though the alteration is certainly a double gain (no matter how slight a one) of beneficial effect, for the carriage is more easily drawn and the road is less worn. Numberless instances might be given of the beneficial benefit of adaptation, even without the production of what is called power in treatises on mechanics.

In treating of the second meaning of the word power, or its synonym, mechanical advantage, we must separately consider its position to be a mechanical and balanced term, a portion of the ordinary force applied gives motion. Suppose a lever, one arm of which OA is ten times as long as the other OB, and suppose that the arms balance each other. A pull of one pound force at A will balance a pull of ten pounds for the first will certainly equilibrate the second, or prevent motion. Nevertheless, it is not true that one pound supports ten pounds; nor can one pound, by any contrivance
POW

484

POW

whenever, be made to support more than one pound. In the case before us, A acts against one pound, but not one pound of B; 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 upwards, at A, at twelve pounds. The same resistances neutralize the first, the pull at A neutralizes the second. To say that A supports B, would be an assertion like that of a person who should say that he had paid 11f. with greater weight with less velocity for a smaller weight with greater velocity than is frequently heard. The apparent power is gained by the contrary exchange, as in the common grinding-wheel and in the lathe. Frequently also the beneficial effect arises from a reservoir of power which is given out in small quantities, or in which the weight or water in the 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 see with Sir Isaac Newton of the Frenchman who, in his Treatise on the Motions of Machine, 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 times. In all the cases above given the friction of the machine and the necessity of moving its wheels, &c. A little attention to such considerations as the preceding will prevent the reader, however unpractised in mechanical considerations, from being led away by accounts of perpetual motion, &c. 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. But nothing is more common than the diminishing 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, &c., by saying that he had invented a machine which would be covered with water but for the application 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 machinery to the performance of that which required so many and varied motions of the fingers. In the second instance, common pumps, or succeptions 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 can do what steam alone cannot.

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 1729, 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 took the title of Lord Pownall 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 1803.

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-
important works may be mentioned his ' Notices and Descriptions of Provencia Romana of Godwin,' London, 1788, 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.' (EncyclopædiaAmericana:Biog.desContemporaneas.)

POYZOUILLI, Puteoli (Pirroioi, Strabo), an ancient town of Campania, situated on the eastern shore of the gulf of Baie, five miles west of Naples, from which it is separated by the bay of Pozzuoli, through which a tunnel was excavated in ancient times. [PozzUOLIo.] 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. Mount Vesuvius is thrown up in one night, in September, 1538, on the site of the Lucerni lake. [PhleGORGes:CAMPi.] Pozzuoli was a colony of Cumae, of which it was the port, and was then called Dianemarchia. 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 (Gyvium Romanum) was sent to Puteoli, after the close of the Second Punic War, in a. C. 194. (Liv., xiv. 45.) The Romans gave it the name of Puteoli from 'putei,' the wells, or, as others say, from 'putor,' the stench of its springs, which are impregnated with sulphur. (Strabo, p. 245.) Puteoli was a flourishing place under the Romans, but was deserted to be 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 unhealthy in the summertime. The remains of several villas 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 pediments 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, but the walls of the boxes 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 liable to take place in those harbours which are confined by solid continuous moles. 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 Baie, a distance of about two miles in a straight line, though the city of Pozzuoli is more than three miles off. (Suetonius, Caligula, 19.) The cathedral is built on the ruins of an ancient temple, the materials of which have been employed in its construction. There is also a subterranean construction called a cistern, or 'Cento Camerelle,' which appears to have been a water reservoir. [BAI.] 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. (Vitr., De Archit., xi. 6.) The old mole of Puteoli was here 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. 25.4.)

PRACTICE, a rule of arithmetic, appropriately so 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, ' How much do forty yards cost at eight pence a yard,' 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 arithmian would immediately see that 12d. 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 a labour by trial and error, but the method of process by which a solution has been completely described in the preceding. Suppose for instance it is required to find the price of 253 yards at 2l. 13s. 7d. a yard. The application of the rule of practice is as follows:—

<table>
<thead>
<tr>
<th>2l.</th>
<th>13s. 7d.</th>
<th>253</th>
<th>£253</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>13</td>
<td>7</td>
<td>253</td>
</tr>
<tr>
<td>10s.</td>
<td>7d. 2</td>
<td>7d.</td>
<td>506</td>
</tr>
<tr>
<td>12</td>
<td>13</td>
<td>7</td>
<td>506</td>
</tr>
<tr>
<td>6</td>
<td>13</td>
<td>7</td>
<td>506</td>
</tr>
<tr>
<td>12</td>
<td>13</td>
<td>7</td>
<td>506</td>
</tr>
<tr>
<td>6</td>
<td>13</td>
<td>7</td>
<td>506</td>
</tr>
<tr>
<td>12</td>
<td>13</td>
<td>7</td>
<td>506</td>
</tr>
</tbody>
</table>

At 1s. 2d. 6d. of 253 yards costs 679 9s. 11d. 1s. 2d. is 303.6674.

20 cwt. is 1 of 1 ton 69.0833
2 cwt. is 1 of 10 cwt. 3.45417
1 cwt. is 1 of 10 cwt. 1.345417
1 qr. is 1 of 2 cwt. 0.77271
1 lb. is 1 of 1 qr. 0.8936
1 lb. is 1 of 1 qr. 0.8936
1 lb. is 1 of 1 lb. 0.0017

22 tons 17 cwt. 1 qr. 19 lb. cost £316.0082.

So that the proper answer is less than a farthing above 39s. The method of process is much shorter than the application of the rule of three, and is also 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 producing fractions out 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>17 cwt. 1 qr. 19 lb.</th>
<th>= 8709821 of a ton.</th>
</tr>
</thead>
<tbody>
<tr>
<td>17 cwt. 1 qr. 19 lb.</td>
<td>= 8709821 of a ton.</td>
</tr>
<tr>
<td>8709821 of a ton.</td>
<td>= 8709821 of a ton.</td>
</tr>
<tr>
<td>1 qr. is 2 of 1</td>
<td>= 8709821 of a ton.</td>
</tr>
<tr>
<td>4 lb. is 1 of 1 qr.</td>
<td>= 8709821 of a ton.</td>
</tr>
<tr>
<td>4 lb. is 1 of 1 qr.</td>
<td>= 8709821 of a ton.</td>
</tr>
</tbody>
</table>

PraECURSUs URBi (prefect or warden of the city) was the title of a Roman magistrate. The office was said to have been instituted by Romulus (Tacit., Annal., 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 had the imperium in urbe. (Liv. i. 59.) He was appointed from among the senators. (Dionys., i. 12.) Whether on the return of the king he laid down his title with his office, is uncertain. During the time of the republic the praefectus 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 power of the consuls (consulare munus usurpatum): he had the right to convoke 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 urbani, on whom the former magistrate becomes a shadow (simulacrum) of what he had been, and was appointed while the consuls were absent from Rome for the purpose of celebrating the Feriae Latinae. This office, being of no importance, was often filled by having a praefectus urbani even appointed several youths under age as prefects of the city. (Tacit., l.c., iv. 36; Dion Cass., xlix., p. 476.) This shadow of a magistrate seems to have continued to be appointed
during the Feria Latina, even after Augustus had made a permanent prefectus urbi. (Suet., Nero, 7.) Augustus invested this new prefect with considerable power, gave him the superintendence of public works, roads, and aqueducts, control of all the coins of the city, and the control of the coinage to be distributed among the people. (Suet., Octav., 37; Tacit., l. c.; Dion Cass., lli., p. 547.) This prefectus urbi was generally taken from the consulars and the most distinguished men of the state. He was also invested with jurisdiction over slaves and turbulent citizens. He 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 were given to him. (See De Offic. Pref. 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 in 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 Brissou, 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 western empire, represented the emperor, and stood as a symbol of the imperial power to the first person in 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 (Syllaba, vi., 15); in the same year he gave his vote before the consuls (Cassiod., Varar., vi., 4), and was the medium through which the emperors communicated with the city.

PRAEMUNIÆ (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 a demand on the defendant for a good situs, &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 praemunire, as now used, has two meanings as to itself, 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 legations into the kingdom, and it would appear that any attempt to introduce foreign jurisdiction or usurp upon the 'kingly laws of the crown' was equally within the penalties of a praemunire. 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 praemunire, 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 whereof the cognizance pertaineth 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 same penalty was given within the realm by suing in chancery to defeat a judgment in a 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 32 Edw. I., 2, 3.)

Numerous statutes have defined what shall be such a contempt as amounts to a praemunire. Most of the earlier are directed against protostors, as they were called, or persons who purport to have the courts of England sitting in foreign parts. They are divided into two classes: (1) holding abbeyes or priories, &c., before whom the offending parties were required to appear and give satisfaction by their attendance or dispatch of their business; (2) 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 that are payable to the dean and chapter in foreign parts. (1 Rich. II., 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 subjuction, but immediately subject to God in all things touching the regality of the same crown, is subject to none but to no other power save as by the laws and statutes of the realm by him defeated and avoided at his will, in perpetual destruction of the sovereignty of the king our lord, his crown, his regality, and all his realm, which God defend.' During the time of Henry VI., several statutes applied the penalties of a praemunire to those who sued for 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 without the leave of the pope (26, c. 11). When the act of 2 c. 2, it was applied to those who refused to take the oath of supremacy, or refused the pope's jurisdiction, abettled publishers of bulls, &c., or sent relief to Jaunits beyond seas.

About this time the penalties of a praemunire were 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: ' 4 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 praemunire. By 7 & 8 Will. III., c. 4, serjeants, barristers, attorneys, &c. are subjected to the same penalties as other offenders in that act. By 2 Geo. III., s. 14, 15, &c., 16 Geo. III., s. 11, the same penalties are extended to all offenders in that act. By the 6 Anne, c. 7, a malicious or advised assent that the then pretend prince of Wales or any person other than according to the acts of settlement and union, has any right to the throne of these kingdoms, or that the pretender is the lawful successor of the crown, or the crown, amounts to the same offence. And 12 Geo. III., s. 11, attaches the same penalties to all such as wilfully solemnize or assist, &c. at any forbaid marriage of the descendants of George II. which act is declared to contract marriage without consent of the crown. But during the same period the penalties of a praemunire were attached to persons guilty of various offences of very different classes, and in some instances, of the slighting of the crown, amounts to the same offence. And 12 Geo. III., s. 11, attaches the same penalties to all such as wilfully solemnize or assist, &c. at any forbaid marriage of the descendants of George II. which act is declared to contract marriage without consent of the crown. But during the same period the penalties of a praemunire were attached to persons guilty of various offences of very differenl classes, and in some instances, of the slighting of the crown.

The word praemunire is now used in its ancient sense, and the word praemunire is still the real issue in any of the other than the election, they are guilty of a praemunire. After the breaking 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 praemunire.

The punishment for a praemunire has already been stated. After judgment, the defendant might formerly have been killed by any man. But Queene Elizabeth and her parliament, liking not the extreme and inhumean rigour of the law in that point, made it more milder (5, 15., 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 right to interest in lands in tail. (5 Inst., 119, 'Of Praemunire.') Prosecution for praemunire is in some instances almost obsolete.
Prosperitus is the Soridea 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 of simple style; the body is unguiform, and the scales are smooth.

Example, Soridea lineata, Gray; Prosperitus lineatus, Dum. and Bibb.

M.A. and Bibron state that the following should be added to Mr. Gray's characters: teeth conical, simple; palate smooth; tongue arrow-headed, scaly, notched at its point— if, as they suppose, Mr. Gray's species is not different from a Cape Solen, into which they saw in Dr. Smith's collection at Chatham; and they think that the locality (New Holland) assigned by Mr. Gray to his species is erroneous.

M.A. ET BIBRON, a word which apparently contains the same elements as the verb praecito. The consuls were originally called praetors, but the name praetor was specially appropriated to a magistrate called the praetorius urbanus, who was first appointed N.C. 365. He was called a collegue of the consuls, and was created with the same aurens. (Liv. vi. 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 consuls. (Liv. vi. 42.) In the year 336 the first plebeian praetor was created.

The praetor, in his origin, seems to have been a kind of third consule. While the consules were at the head of the armies in the field, the praetorius exercised the consular power with a certain authority. He was the chief magistrate in the administration of justice (ius in urbe diebati, Liv. vi. 42). On some occasions the praetor led the armies of the state. (Liv. vi. 23, &c.) Yet the imperium of the praetor was less than that of the consuls, to whom he owed obedience. There was a distinction in the impetus of the praetor. He had only six lictors, from which circumstance he is called Polybius 'the general with six lictors' (πολύβιος ο θεωρητής ἐπανίτιας, and sometimes simply θεωρητής, &c.) of praetors works to show that the praetor was generally included in 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 consules, there was nothing in the nature of the office which limited the number; and accordingly in N.C. 247, another praetor, called Praetor Peregrinus, was created, even during the consules 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 the army in the disposition of the army 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 seas, the praetors often received the same form of provinces, praetors were sent to govern them. Thus two new praetors were appointed for Sicily and Sardinia (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 legatus. Sylla increased the number of praetors to eight.

The praetorius 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 Apollinariums and giving gladitorial shows to the people. Julius Caesar increased the number of praetors to ten, then to twelve, fourteen, to sixteen; Augustus reduced the number to ten, then again raised it to sixteen, and finally fixed it at twelve. Under Tiberius there were sixteen. A permanent praetor for fidei commissa was subsequently appointed (Reg. 1, tit. 2, s. 9), and praetors were required to have a validated leave of absence only after consultation between the Father of the Praetors individuals; and a praetor was appointed by the emperor M. Antoninus (Capitol. M. Anton., c. 10) solely for matters relating to guardianship (tutelae).

An office like the praetorius in some respects may be traced back to the praetorius urbis; or to an office of some other name; and the vicarious duties of the office appear clearly in the func-

ctions of the antient praetorius urbi (Prosperius Urbi), whose office became of less importance on the appointment of the praetorius urbanus. As late as the time of Cicero (Ep. Fam., x. 12, xii. 20), we find the praetorius performing the duties of the consules in their absence.

The praetorius 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 magistrates who lie in the hands of the Senate and Consul, and in the creation of edicts, which were the foundation of a body of law known under the names of Jus Honorarium or Praetorium. The praetorius peregrinus also had the Jus Edicendi; and the edicta praetoria were the first code of the largest body of this edictal law. The edicta of the praetorius 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 for by the existing laws, 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 procedure. They have a new form to an existing 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 reform in those old magistracies, and in the character of the edictum. The praetorius also interfered in a summary way by his Interdict, particularly in matters of possession (Possession), in the case of a man who was accused of having committed an improper management of his property, or of a profligate who was wasting his substance; in which cases 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 for it (Reg. 4, tit. 2). Interdicts. (Savigny, Von dem Schutz der Minderjährigen, Zeitschrift x. 261.) It is stated that the praetorius was one of the promulgators of the Twelve Tables. In the year 306, this was put 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 edicta of his predecessors were not absolutely binding: to acquire an actual praetorius, were frequently adopted by him. Indeed we cannot conceive that the praetorius could have acquired that stability and consistency which it undoubtedly has acquired at this time (Ov., Ep., 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 praetorius' edicta, and a large part of their writings had for their object the interpretation of these edicta. Under the emperor Hadrian the edicta of the praetorius were collected and arranged by Salvius Julianus, a distinguished jurist, under the name of Edictum Perpetuum, and from this time the legal arrangements of the praetorius edicta by the praetorius edict ceased. The constitutions and excerpts of the emperors supplied the place of the edict. In civil matters, except in the cases of interdicts, the praetorius did not give final judgment. (Gaius, iv. 139) [Interdict.] A person who had a claim against another, which was disputed, applied to the praetorius for the purpose of obtaining a reference of the matter in dispute to a judge or judges, with the stipulations and preformances, which were contained in the formula. [Juv. xiv. 110.] The proceedings before the praetorius 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 praetorius also presided in questiones, or judicial inquiries into crimes, or that class of offences which were the subject of judicium publica. Sometimes persons (quaesitores or quaesitors) were appointed to inquire into such particular cases, which were committed to the praetorius. After the number of praetorius had been increased to six, the praetorius urbanus and peregrinus exercised their usual jurisdiction, and the other four presided in questiones as to edicta, which were called perpetuum (Cic. Brut., 102), apparently because the praetorius exercised the functions of quaesitors during the whole year of office, and not, as was the old practice, on the particular occasion only that they appointed quaestores might be appointed. Sulla, by various leges, added to the num-
number of questiones perpetuum, and at the same time made two additional prelates. The corruption of the praetor urbans and pergeminus must have declined after the time when their edictal power ceased to be exercised, which, as already observed, was in the time of Hadrian. (Savigny, Von dem Schatz, &c.) It is true that Gaius, who died after the time of Hadrian, seems to speak of a certain praetorius jus edicendi as existing in his time; and it might be 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 the times when the power ceased 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. (Praefectus Ubus.) The praetorian guard is the name of a select cohort which attended the person of the praetor or commander of a Roman army. Salust (Caesaries, 69) says that Petreius, finding that Caligula and his followers defended themselves more stoutly than he expected, ordered, as a last expedient, 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. Appius Bell Ciu.) says that after the battle of Philippi they dismissed all those soldiers who had served their time, except 4000 men who requested to remain in the service, who were distributed in praetorion cohortes, forming as it were the praetorian household. After the final overthrow of the republic, Augustus formed the praetorians into nine cohorts, and fixed their station in the capital as guards to his person. (Suetonius, Augustus, 45.) They became in fact, under the name of the imperial guard, the most trusted body of troops in the Roman empire. The prefect of the praetorium was the commander of the whole body of praetorians. They were all picked men, chosen from Old Latium, Umbria, Etruria, and the other Roman colonies, and were partly foreigners (their numbers are given in Tacitus, Hist. iv. 5.) Under Vettius the praetorian cohorts were increased to sixteen. (Tacitus, Hist. ii. 93.) In the frequent revolutions of the empire the praetorians acted a considerable 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. Dioecletian reduced the number of the praetorians, and Constantine entirely abolished them.

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 adopted at Rome in the early period of the empire. In 1268 Louis IX. issued a pragmatic sanction concerning the discipline and temporalities of the Gallican church. (Boellesu, Decretal Ecclesia Gallicana.) But the most celebrated pragmatic sanctions is that issued by Charles VII. of France, in 1438, in consequence of the schism in the church between the council 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 a league attended both from the popes and from the council of Basle. In this synod it was decided that the earlier council of the pope having previously dispelled the schism, and which had been ratified by Eugenius 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 of the bishops were consequently signed by the king, with the concurrence of both his spiritual and lay advisers, for the regulation of the discipline of the Gallican church, framed upon the decrees of the council of Basle, and these constituted the council of VIII. 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 disposal of ecclesiastical benefices. 3. The cases in which appeals to Rome were allowed were strictly limited. 4. The annates, or first-fruits, paid to Rome, were abolished. About twenty years after, Louis XI., wishing to please pope Pius II., in order to obtain the investiture of Naples for the duke of Anjou, gave up the pragmatic sanction, the original of which he sent by the bishop of Aix to Rome, where it was ignominiously dragged through the streets. The parliament of Paris renounced, and some years after, Louis having quarreled with the pope, the pragmatic sanction again obtained the force of law. In fact it was in the foundation of the liberties of the Gallican church. The concordat of Francis I. with Leo X. made considerable improvements in the regulations of the pragmatic sanction, and gave rise to a strong opposition on the part of the parliament of Paris. [Concordat.

Another pragmatic sanction, which has acquired an historical celebrity, is that issued by the emperor Charles VI., in his capacity of king of Bohemia and sovereign of the duchy hereafter to be called the Tyrol, which regulated the succession in his family. (Hansburg, House of; Charles VI. of Germany.) Prague, the capital of Bohemia, is situated near in the centre of the kingdom, in 50° 2' 19" N. lat. and 14° 25' E. long. It lies on both banks of the Moldau, in a narrow valley which is shut in by eminences, on the sides of which a great part of the city is built. In size and beauty Prague is the third city in Germany, and produces a very striking effect when viewed at a distance, by its commanding situation, the lofty steeples of its numerous churches, and the fine palaces and public buildings. The city consists of four distinct parts, forming four large quadrants. There are on the right bank of the river—1st, the old town, which is gloomy and closely built, and which includes the quarter assigned to the Jews, who, as in some other towns in Germany, are not allowed to reside amongst the Christian population; 2nd, the New Town, which is inhabited by the nobility and moneyed classes; 3rd, the suburbs, with only 278 houses, in which nearly 7000 Jews are crowded together, so that many an incommodious house belongs to ten different owners, and two or even three houses are built one behind the other; 4th, the Schlossberg or a semicircle, enclosing a valley in which the quarter called the Kleinseite (or Little Prague) is built. This quarter is much smaller than the old town, but contains many considerable gardens, fine palaces, and lofty houses. The fourth quarter, called the Hradenich (pronounced Radshin), is built on the Schlossberg (the Palace Hill). This is the smallest but the finest part of the city, in which there is a great number of magnificent palaces. The town of Wittenberg, which joins the village of Smichow, on the left bank of the Moldau, are reckoned as part of Prague. Including all these parts, the city is ten miles in circumference, and two miles and a half in breadth. The streets are broad and well-paved, and the houses in general are lofty and well-built. They have been much improved of late years. The old town and the Kleinseite are connected by the celebrated bridge over the Moldau, the construction of which was commenced by Charles IV. in 1358, and completed by Vladislaus II. in 1567. It is 1790 Vienna feet long, 35 broad, and has 16 arches; it is adorned with 29 statues and groups of saints, and has an antient tower at each end. There are in the city forty-six Roman Catholic and two Protestant churches. The synod of Prague was usually held in the church of St. Vitus, which is one of the most magnificent in Europe; its three great bells, 15 tons in weight, weigh 3000 pounds each. It is adorned, and contains paintings of the fourteenth century, a Madonna, said to be by Holbein, and numerous antiquities and relics. The great ornament of the cathedral is considered to be the richly adorned monument of St. Nepo-
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 repairs. Another church, however, is the tomb of the great astronomer Tycho Brahe, who died in 1603. Many of the more modern churches, which are chiefly in the Italian style, are worthy of attention. Among the palaces, the Imperial palace at Vienna is the most magnificent in the whole city, both for its 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. King Charles V., of France and his family resided here for some years in this palace after their expulsion from France. Among the other palaces the most magnificent are those of the famous Wallenstein, of Count Cerny, of Count Ledebour, and Count Bubier, each of which we should visit. There are also many smaller palaces and town buildings, and the Collegium Clementinum, built by the Jesuits, in which Joseph II. placed the archiepiscopal seminary, where from 300 to 400 pupils are educated as secular priests. It contains many lecture-rooms, the academy of painting, a gymnasium, the university library, the observatory, a printing-office, and several scientific collections. The old town contains also the theatre, the mint, and several palaces. In the new town, the suburbs, the theatre, the hospital of the Propagation of the Faith, is one of the largest and most regular buildings in the city. Most of the hospitals and charitable institutions are in the new town. In the Kleinseite, the arsenal and the government-house. 4. In the Hradisch, the archbishop's palace. The university of Prague is the oldest in Germany. It was founded in 1348 by Charles IV., on the model of that of Paris, and in 1349 it had 409 students. After the death of Charles, disputes arose between the foreigner, whom he favoured, and the natives. Wenzel allowed the Poles, Bohemians, and Saxons together only one vote in election of the university, and thus many thousand of the former to leave the university, and gave occasion for the foundation of the universities of Leipzig, Ingolstadt, Rostock, and Cracow. From time to time the university could never recover till Maria Theresa, Joseph II., and Francis II. became its protectors. It has now 53 professors, 14 assistants, and about 2000 students. The medical faculty in particular is most liberally provided for. Connected with it are a veterinary school, a school for midwifery, and a school for women. There are geological and anatomical collections, a botanical garden, a chemical laboratory, and an observatory, most amply furnished by Joseph II. and Francis II. The annual expenses of the university amount to 717,170 florins. The next step in the preparation of students for the university. The schools for the education of persons not intended for the learned professions and for the inferior classes are very numerous, and are associated with an economical society, an academy of the fine arts, and a musical conservatory, but above all the Academy of Sciences, and the Bohemian National Museum, founded by Count Colowrat, with important collections, and libraries. The university library consists of 120,000 volumes, and 4000 rare MSS. of classical and Slavonic literature, besides which there are eight public and several private libraries open for public use. The Imperial Cabinet of Natural History has greatly increased of late years. The charitable institutions, for instance the hospitals of the brothers and sisters of Charity, are in the most admirable condition. There is a great number of physicians for the poor, a vaccine institution, twelve hospitals, of which that called the General Hospital receives annually from 1300 to 1600 patients, without regard to the difference of religion, which is not the case in the others; a lunatic asylum, a living-in institution, a poorhouse, and an orphan asylum, entirely supported by private societies, partly in poorhouses, and there are also ten public and private institutions for widows and orphans, among which are an asylum for the blind, and another for the deaf and dumb.

Prague has a very flourishing trade, being the centre of that of Bohemia: the transit trade is considerable, and there are three great annual fairs.

Although Prague is not considered to be the residence of the sovereign, it is the seat of the government of the kingdom and of the courts of justice, and is the head-quarters of the military governor of the kingdom, with a garrison of 12,350 men. It is also the residence of numerous families of nobility and gentry, who increase by annual immunities from them the necessity of living in retirement, though not to enable them to figure at the court of Vienna. But it must be observed that the higher nobility come little in contact with the other classes, and in general the pursuit of pleasure is more attended to by the great mass of the inhabitants than the more refined enjoyments of science and learning. There is but little, comparatively speaking, of that social intercourse which is so common in German promenades, and gardens, are not much sought after at Prague. There are however some islands in the Moldau laid out in walks and tea-gardens; the palace garden and that of Count Waldstein (Wallenstein), which are open to the public twice a week; the grounds of Prince Kunsky and Baron von Wimmer, and some others. The environs of Prague abound in natural beauties. The great delight however of the citizens are balls, concerts, masquerades, and theatrical performances, which, for instance that of St. Nepomuck on the 16th of May, are celebrated with much pomp.

Prague is an antient city, but the time of its foundation is uncertain. It was once a capital of the Wurtemberg and called in the fifth century Marabodunum; others that 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 by the troubles connected with the consecration of the Huastes in the fifteenth century. In 1620, 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 this imperial 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 2900 Imperial dead, 125 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 churches suffered severely. 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 (the most numerous) and Moravians (the next in point of numbers and number of churches) and some Poles. The principal occupations are trade and manufactures, and among them an economical society, an academy of the fine arts, and a musical conservatory, but above all the Academy of Sciences, and the Bohemian National Museum, founded by Count Colowrat, with important collections, and libraries. The university library consists of 120,000 volumes, and 4000 rare MSS. of classical and Slavonic literature, besides which there are eight public and several private libraries open for public use. The Imperial Cabinet of Natural History has greatly increased of late years. The charitable institutions, for instance the hospitals of the brothers and sisters of Charity, are in the most admirable condition. There is a great number of physicians for the poor, a vaccine institution, twelve hospitals, of which that called the General Hospital receives annually from 1300 to 1600 patients, without regard to the difference of religion, which is not the case in the others; a lunatic asylum, a living-in institution, a poorhouse, and an orphan asylum, entirely supported by private societies, partly in poorhouses, and there are also ten public and private institutions for widows and orphans, among which are an asylum for the blind, and another for the deaf and dumb.

Prague has extensive manufactures of various kinds, in all about sixty manufactures of cotton, hosiery, silk, wool, leather, hats, gloves, earthenware, gold and silver, plate, goods, mathematical and musical instruments, glass, buttons, snuff and tobacco, paper and paper-ware; besides which there are breweries, salt-petre-works, and many others.

P. C., No. 1164.

(Die Österreichische National Encyclopädie, 1838; Blumenbach, Gemälden der Oest. Monarchie, 1832; Hassel; Stein; Hirschelmann; Cannabich; Griselles, Neuestes Gemäldes von Prag; Schottky, Frag wie es was und ist, 1832.)

PRAIRIES. [PLAINS.]

PRAKRIT. [SANSKRIT.]

PRAKAT, CHRISTIAN HENRIKSEN, was born September 4th, 1756, in Guldborgsund. After having been educated by his father, who was a clergyman, and next passing a short time at the school at Frederiksborg, he was admitted to the University of Copenhagen, where he applied himself to the study of law and politics. 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 pursuit. His continuing to apply himself to this study, probably 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 "Huelslindende," or 'Commercial Journal," which he first

VOL. XVIII.—3 R
carried on in conjunction with Cramer and Elchart, and afterwards by himself, but gave it up at the end of five years, for the protection of his family and the continuance of his health.

From that time he devoted himself, as far as his official duties would permit, to literature, and had indeed already signalled himself in it by his "Störkogder," which appeared in 1781, and the success of which most probably, for which he was rewarded with the publication of another that was mentioned, 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 is so original, simple, and homely, as to be well adapted for a Ridderforty or many chronicles 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 Störkogder's adventures. So Skurh's model and the sombre tone of the "Talmanns." Thus considered, this production of Pram's (in fifteen cantos) is a classic one of its kind, and is one that places its author by the side of Ariosto and Wieland.

Shortly afterwards he commenced, with the assistance of Ribeck, the "Minerva," one of the best literary periodicals of its time in Denmark, and one which also discussed many important political and statistical questions. Few could have been better qualified than Pram for conducting such a work, being at that time in both departments of it; and to the literary part he contributed a number of his minor pieces both in prose and verse. Among his other services to literature may be reckoned that of having, together with his friend, the Norwegian merchant and publisher of the Scandinavian Literary Society in 1796: of which institution he was president from 1811 to 1818. He may also be ranked among the Danish dramatists, having, besides his "Damon and Pythias," and "Fingal and Frode," produced several comedies and other pieces, differing for the most part inimportance from the plays usually performed in the Cashmerian as in its Tibetan habitat. He states that though abundant in various directions, the Cashmerians do not esteem it of any value. Dr. F. is of opinion therefore that he could import it with advantage to the Cashmerians, of its being the only food in many of the bleak and barren tracts of Tibet. In Cashmer, where there is a superabundance instead of a deficiency of pastureage, it is accordingly much less esteemed. But in many barrens and bleak situations, with cold and wet weather, it would doubtless be a valuable acquisition, if the climate of the country be not too moist. Parts of the Cape of Good Hope, New Holland, and Van Diemen's Land seem well suited to it.

Arran, in describing Alexander's expedition across the mountains which he calls Caucasus and Paropsamnus (iii. 25), says, nothing but Silphium and the turpentine-tree grow there, notwithstanding which it is very populous, and multitudes of sheep and neat cattle are seen, for they feed upon Silphium, of which the sheep especially are very fond. This bears so close a resemblance to the prangos, both in locality and properties, that it is as likely to have been the Silphium of the ancients as the asafoetida plant, which it is supposed to be by others. (Silphium.)

PRANIZA. [IPA VODA, vol. xiii., p. 56.]

PRASII [HINDUSTAN, p. 223.]

PRATICOLO. [SYLVIADE.]

PRATOSIBA. [BRA.]

PRATOSIBA, a genus of birds allied to the plovers. [PLOVERS] Temminck places the form under his order (the 11th) Alectories.

Generic Character.—Bill short, hard, convex, curved for upwards of half its length, and compressed towards the point. Beak as at the sides of the mouth, and finely cleft. Legs feathered nearly to the knee; toes, three before and one behind, the outer united to the middle one by a short membrane; claws long, and drawn to a fine point. Wings very large, the first quill-feather the longest. Tail more or less forked. (Gould.)

Example, Glareola torquata, Hirundo pratincola, Linn. Description.—Old Male and Female.—Summit of the head, neck, back, scapulars, and coverts of the wings grey brown; throat and front of the neck white tinged with reddish, which colour is encircled or framed, as it were, by a very narrow black band, which ascends towards the corners of the bill; space between the eye and the bill black; breast white, bordered with reddish; under coverts of the wings cinnamon red; lower parts white, clouded with reddish; coverts of the tail and origin of the caudal feathers pure white, the rest blackish towards their end; bill black, red at its base, its reddish band and of the eyes bright red; feet reddish ash; tail very much forked. Length rather more than nine inches. (Teem.)

In this state it is the Perdiz de Mer de Brison, &c.; the Perdiz de Mer ordinaire et du Collier de Gerard; Aus; Tieren vorhanden; Latin name; Der Sandkuh of Bechstein; Das Dactythus Halbland and Sudische Sandkuh of Brehm; and Permic de Mare of Savi. Variegates.—The grey brown brighter or deeper; the white of the throat more or less clouded with reddish or brighter russet; the gular black band more or less intense in colour,
and often accompanied by a very small white line. The band too is often only indicated by small black spots. (Temm.)

*Young.*—Upper parts brown ash clouded with deeper undulations and whitish borders; throat tarnished gray surrounded with brown spots, disposed so as to replace the band which surrounds this part in the old birds; breast and belly deep gray 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, *in grise, la brune, et la Girole de Sonmini (Buff.); La Perdrix de Mer des Maldives, de Coromandel, et de Madras; Sonnerat; Das braunringige Sanduhn und Gefleckte Sanduhu von Bechstein; and collared and various further varieties of Pratincoles 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 Transatlantic 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 as yet are discovered. Of these, two (the *G. giralata* 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, 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 Neusiedel 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. England it is only an occasional visitor; but in Germany, France, and Italy, it is a bird of peripatetic 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 Boccagno, 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, is not less distinguishable for celerity on the ground, and often catches its prey as it runnily runs along. This elegant and graceful bird incubates in the concealment afforded by reeds, osiers, and tall herbs, laying three or four white eggs."
material, the only record that remains is an undoubtably anciant copy, in marble, of the Apollo Sauroctono. 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 of composition, which is the distinguishing characteristic of the original. It is justly considered 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 the goddess were made; one, dressed, 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 purposed of seeing it. In the temple of Athena at Bithynia there 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, ob serves 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 composition of the famous statue. Cnidus is mentioned by Lucian as the finest of the works of Praxiteles (Elogev, c. 4), and from the description in another passage (Eur. c. 13, &c.) we may form some notion of the celebrated work. Praxiteles also the subject of many epigrams in the Greek Anthology. The original work fell a prey to the flames, at Constantinople, in the fifth century, in the dreadful fire which destroyed so many other fine monuments of art collected in that city. The location of the Venus of Cnidus may be considered among the greatest which art has sustained; for no production in antient sculpture, with the single exception of the Olympian Jupiter of Ephesus, has received such universal and such unequally admiring estimation. Two statues of Cupids are also mentioned among the most esteemed works of this master. One of these was so beautiful that it is placed by Pliny quite on an equality with the famous Venus of Cnidus. The beauty of marble caused the idea 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 as, 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 is at least suggestive of the interesting character of the work 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 the statues which was to be transmitted to her, 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, exclaiming: '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. 26.) Another work that has been thought worthy to be recorded were two statues of Phryne: one was of marble, and was placed in the temple of Venus at Thebes, the native place of the countess; the other was of brass, and was dedicated 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 some sculptures that decorated the pediments of the temple of Hercules at Thebes. (Paus., i. 11.) 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 find in it an originality of form and time or sense, a character, such as distinguished the art which immediately preceded his era under Myron, Phidias, and Polycleitus; whose genius led them to represent the more exalted and magnificent character of the ancient world, as Jupiter, Juno, and Minerva, or the classic forms of heroism, war and athletics. 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 acquired great skill in 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 'circumcisio' by his own hands, which is the common characteristic of the earlier painter, it seems reasonable to conclude that this cannot simply mean polishing and rubbing, but that some varnish or encaustic was laid over the surface of the marble after it had left the sculptor's hands, in order to give it a rich soft ness, similar to what the Italians, in speaking of the flesh 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; but it is uncertain whether it was a mere varnish encaustic, or a wash of whitewash or whitewash and wine (if the latter, either the preparation or the stain 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 exhibited 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 Cephissodorus, or Cephissodochus, both of the Venus artists. Pliny says of the latter, 'Praxitelli flius Cephissodori rei et artis heres fuit.'

There was also another artist called Praxiteles living at a later period, who was a modeller and painter. There was also a painter of the same name, mentioned by Pliny (Hist. Nat., xxxv. 11).

PRAYA. [AZORES.]

PRAYER, a term in theology, used to designate the intercourse passing between 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 prayer 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 public worshipping of God, of his thoughts, signifies to ask something, and the intercourse of which we have spoken is described by a word which etymologically describes only one part or section of the whole idea, insomuch 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 overseeing power over him, which power is conceived to be 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 must necessarily at some time or other have a strong inclination 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 some 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 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. It is in times of danger and calamity that 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 even 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 yet 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 expressing the same sentiments, and at the same time showing that other topics may properly be introduced and mingled with supplication. There are prayers of men who had not the
light of either of the divine dispensations, and there are wise
directions concerning prayer in the writings of such men;
but Scripture therefore the Old Testament contains many
prayers, and many hints and observations respecting prayer, all
of which are very instructive, and held in devout reverence by those who receive the persons whose
words are its examples.

From these examples, and from the instructions incidentally
given, Christian divines have deduced certain principles
respecting prayer. They have in fact raised a kind
of system of prayer; dividing and subdividing the several
branches of it, and it is to be observed sufficiently to say that
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
believer marks the dignity of the one to whom he is speaking;
that he entreats of the other the grant which we entreat of him: (2) expressions of our own unworthiness to receive more blessings than he has already seen proper to bestow upon us; either on account of a general persuasion of remission, or of some particular sin of
which we have been guilty. This is thought to be in accordance 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 supplicant, as setting up a sense of the proper dignity of God and a disposition to acquiesce in whatever may be the divine will.

(3) Then comes the supplementary part, in which general
or particular blessings are besought, suitable either to the
general or particular circumstances of the moment. (4) Intercourse for others, the entreaty of the divine favour for the whole human race, and such blessings as particular classes of persons peculiarly need. This thought needs to be cherished, as kind 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, irrespective of the wants and wishes of an individual member of it. (5) 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, whether immediate or remote, in Christ, or in Christian churches, or to be brought into the mind's thoughts on the occasions 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 nature of the individual minister; and such also are the prayers for the most part in those collections of prayers many of which are printed for the use of persons, either in their private or family devotion, who find a difficulty in using the prayer in the book of common prayer.

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 of the Church of England as appointed by authority. The effect of liturgies in public worship is to restrain the manifestation of peculiars in the notions of particular ministers respecting the nature and order of prayer: to keep out of the public assemblies of Christians extravagance and enthusiasm: to bring 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. [Oration.]

PREBEND (prebenda, from prebeo, a Low Latin word signifying provision or provender), the portion which the member of a cathedral or collegiate church, called a prebendary, received in right of his place for his maintenance. It was named from the place whence the profit proceeded, which was either in land or money; and, when attached to that church, or some other church whose revenues were appropriated towards the maintenance of the member of the cathedral or collegiate church. Prebends were of two kinds, simple and dignitary. A simple prebend was held for life, by the prebendary, and by his order; and the office was not annexed to a benefice. A dignitary prebend had the latter part of the dignity. Some prebends were donative, others in the gift of laymen, who, in case of vacancy, must have presented the prebendary to the bishop; but the church or dean and chapter did not. The bishop instituted him, and the dean and chapter then inducted and placed him in a stall in the church. If a bishop were the patron, he collated. At Westminster the king collated by virtue of which he prebendary took possession without institution or induction. A muniment is 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 corporation aggregate were paid to the dean and chapter. A prebend, being a benefice without cure of souls, was not formerly inoffensive to be held with a parochial benefice, but one prebendary could not possess two prebends in the same benefit; though he might in another. But now, by 1 & 2 Vic., c. 106, no spiritual person holding more benefices with cure of souls than one shall hold any cathedral prebend; or, holding any cathedral prebend and also any benefice with cure of souls, shall hold any other cathedral prebend; 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, 90; Rogers, On Ecclesiastical Law, tit. 'Dean and Chapter.') (Dean.)

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 recommended relative to cathedral prebends. The state does not affect existing interests. Its provisions, in general terms, are as follow:—Henceforth all the members of chapters are to be styled canons. Provision is made for the suppression of many existing prebendaries on the necessary. Additional for St. Paul's, and ultimately all cathedral and collegiate churches, as to number of canons, are to be placed upon the following footing:

<table>
<thead>
<tr>
<th>Church</th>
<th>Cathedral or Collegiate</th>
<th>Cathedral or Collegiate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. of Canons.</td>
<td>No. of Canons.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Canterbury</td>
<td>6</td>
<td>Manchester</td>
</tr>
<tr>
<td>Durham</td>
<td>6</td>
<td>Norwich</td>
</tr>
<tr>
<td>Ely</td>
<td>6</td>
<td>St. Paul's, London</td>
</tr>
<tr>
<td>Westminster</td>
<td>5</td>
<td>Peterborough</td>
</tr>
<tr>
<td>Winchester</td>
<td>5</td>
<td>Ripon</td>
</tr>
<tr>
<td>Exeter</td>
<td>5</td>
<td>Rochester</td>
</tr>
<tr>
<td>Bristol</td>
<td>4</td>
<td>Salisbury</td>
</tr>
<tr>
<td>Carlisle</td>
<td>4</td>
<td>Wells</td>
</tr>
<tr>
<td>Chester</td>
<td>4</td>
<td>Windsor</td>
</tr>
<tr>
<td>Chichester</td>
<td>4</td>
<td>Worcester</td>
</tr>
<tr>
<td>Gloucester</td>
<td>4</td>
<td>York</td>
</tr>
<tr>
<td>Hereford</td>
<td>4</td>
<td>St. David's</td>
</tr>
<tr>
<td>Lichfield</td>
<td>4</td>
<td>Llandaff</td>
</tr>
<tr>
<td>Lincoln</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

All bishops are authorised to confer honorary canonicities, without enrolment, to the number of twenty-four in each cathedral church. No canon is, by virtue of his canony, for the future to possess any separate estate or income, all of which are to vest in the Ecclesiastical Commissioners appointed by 6 & 7 Wm. IV., c. 77. The profits of the suspended canonicities 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 annual income of 300l.; the deans of St. Paul's and Westminster, and the warden of Manchester, of 200l. each. The canons of each of those churches, 100l. The dean of every other cathedral or collegiate church in England, an income of 100l. of St. David's and Llandaff, 70l. The canons of every other cathedral church in England are to have 50l.; of St. David's and Llandaff, 35l. 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 presentation belonging to him by right of his office. The minor canons are to be appointed by the chapter.

PREBENDARIES. Two terms. A prebendary is one who has a prebend (prebenda), a canon endowed with land or an advowson or tithe. 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 his prebend belonged. The estate was not to be sold or alienated for more than two months. The number of prebendaries varies in different churches. The whole body attached to each, together with
the dean, forms a corporation aggregate, called the dean and chapter. Each prebendary, having as his distinet estate, is said to be of that, a sole corporator, as well as member of the corporation aggregate. The office of the dean and chapter is to supply the grants, leases, &c. of the bishop. Anciently they formed his council, as they still do nominally. On this account the king, Newberry, under the form of a congé d’élie 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 are governed by canon 43; whether in their churches, and in other churches in the diocese, especially those whose revenues are derived from their properties, or to substitute other preachers approved by the bishop. A prebendary could not make a greater gain by the installation, or induction. [Dean's CHAP. I] (Termes de la Loi, tit. * Prebend, * Chap. I; Com. Dig., tit. * Ecclesiastical Persons.*)

PRECESSION, 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 level, and all 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 is placed. But religion give no precedence of one before another; all move on an equal level. But above these are certain persons, such as the members of the liberal professions, persons who hold or have held offices in the state, others, who take precedence of the rest, and who are allowed to exercise any law according to their own will, yet by the constant usages of society. And again, the individual who may form perhaps the thousandth part of the whole community, who possess this privilege of precedence, have that power and control over mankind customs 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 an incident to the creation of new courts or officers, or in singular positions of the royal family, that difficulties arise. The members of the College of Arms, who are the council of the earl-marshals of England, are usually referred to in questions of precedence; and to them is assigned the arrangement of public ceremonies, such as marriages, 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 peersages.

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 precedence of the one or the other kingdom represented. In the Philoxenus* of Sir John Fret tenet there are almost insurmountable instances of the struggles made for precedence by ambassadors of the state of Venice in the reign of James I.

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, precession, 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, and 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 the earth of 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 intersections of the ecliptic and the equator, 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 with a variation, 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 poles. The 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 plane of the equator and 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.

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 equator, and $CQ$ a line perpendicular to it, pointing therefore to the pole of the ecliptic, or the axis of the system; 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 $CQ$ should describe a conical surface, the equinoxes $B$ and $A$ 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 motion 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 the centre of the oval moves forward on the circle with the motion of precession, let the point $P$ move round the oval with a motion much on the axis 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 to and from the ecliptic; which are the motions described as constituting the nutation.

The precession 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 56″ seconds per annum, or about $\frac{1}{4}$ 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, a 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. Let the top be supposed to remain with its axis at one angle to the vertical, except only a slight balance moving from the equator to the vertical, and let the conical motion of the axis be slightly increased and retarded in such a manner as to complete the motion 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 paper, and he will see that the ecliptic crosses the equator under the

---

1 It will perhaps be more intelligible to imagine all the stars moving slowly forwards in parallel to the ecliptic, the equinoxes remaining unchanged.
tail of one of the Fishes, so that the vernal equinox is nearly in a line with the stars Andromeda and γ Pegasii (Alpha- rat and Algenib). These stars then are invisible at the beginning of the spring, being in the region of the heavens nearest to the horizon. Later on, twelve thousand three hundred years elapse, 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 the Fishes. On any other day of the year the sun 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 are highest in the sky, the sun's light is brightest, is undergoing a gradual alteration. Hessdor, for instance, says that in his time and country Arcturus rose at sunset in sixty days after the winter solstice; Newton calculated that this took place about n.c. 876, which is one of his reasons for supposing that the poet was alive about that time. The phenomenon however is itself rather vague, and Hesiod may be supposed not very exact in his description. It is generally considered that Newton attached too much importance to such data in settling his system of chronology.

About two thousand years ago the equinox was twenty-eight degrees more advanced among the signs, and was near the beginning of the Congellation Aquarius. It is known about this time that the precession of the equinoxes was discovered by Hipparchus (Astronomia; Hipparchus), and since that time the vernal equinox has preserved the title which it properly held at the time when its motion was discovered, namely, the first point of Aquarius. Astronomical considerations have been made to move the equinox, at least until lately; counting from the equinox, the first thirty degrees of the ecliptic have been always called Aries, the second thirty Taurus, and so on. Thus when an astronomer of the middle ages ascerts the longitude of a star to be 18° 22' mean, he means that it is in 18° 22' of the astronomical Libra, a constellation supposed to begin at 5h 30m or 180° distant from the vernal equinox. An astronomer of our days would say the star's longitude was 19° 22'.

Taking the beginning of the year 1750 as the starting point (as is generally done since the publication of the Mécanique Celeste), and calling t the number of years elapsed, the whole motion of the equinoxes from precession, the motion of the planet on the celestial sphere, is

\[ 50\text{''}176668 + 0\text{''}0001221483 t, \]

while the position in one year is

\[ 50\text{''}176666 + 0\text{''}0000442956 t. \]

M. Bessel substitutes 50° 21129 for 50° 176668.

The obliquity of the ecliptic, assumed at 23° 28' 18'' in 1750, changes to

\[ 23° 28' 18'' - 0° 00048368 - 0° 0000072925 t, \]

its yearly diminution, arising from the planetaction, in dependence of nutation, being

\[ 0° 00048368 + 0° 0000054459 t. \]

M. Bessel takes 23° 28' 17'' 62 for the obliquity in 1750, and uses 0° 457 instead of 0° 48368.

The nutation affects both the place of the equinoxes and the obliquity of the ecliptic. Let the effect upon the former, called the equation of the equinoxes, be \( E \); and that on the latter \( O \). Let \( q \) stand for the mean longitude of the moon's ascending node, \( \alpha \) for the sun's true longitude, and \( \delta \) for the moon's true longitude. The formulae which express \( E \) and \( O \) are of the following form:

\[ E = A - B \cos q - C \cos 2 q - D \cos 3 q + \ldots \]

\[ O = a \cos \alpha - b \cos 2 \alpha + c \cos 2 \alpha + d \cos \delta + \ldots \]

The values of \( A, a, \) &c., depending upon the moon's mass as compared with that of the earth (an element which has caused some discussion), have been given in a slightly different manner by different astronomers. We subjoin their values according to Laplace, Brinkley, and Littrow; the two former as cited by Mr. Baily, the latter from Krümel's 'Sammlung der Nauhwendigen Mathematischen Formel.'

<table>
<thead>
<tr>
<th>Laplace</th>
<th>Brinkley</th>
<th>Littrow</th>
</tr>
</thead>
<tbody>
<tr>
<td>A 18° 0377</td>
<td>17° 29' 29.6</td>
<td>17° 29' 29.8</td>
</tr>
<tr>
<td>B 0° 0707</td>
<td>0° 026</td>
<td>0° 026</td>
</tr>
<tr>
<td>C 0° 0933</td>
<td>0° 035</td>
<td>0° 035</td>
</tr>
<tr>
<td>D 0° 0163</td>
<td>0° 027</td>
<td>0° 027</td>
</tr>
</tbody>
</table>

It thus appears that by far the largest part of not the place of the planet, but upon that of its node. This node (Moon) performs a complete regression revolution in about eighteen years and a half, in which time the main effect of nutation goes through all its changes. Bradley, the discoverer of the nutation, found out and assigned the law of its largest term; the remaining terms are due to the theory of gravitation. 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 immediately after his discovery of nutation 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 "Re- vision of the Mapp of the Skies," in which the phenomenon was shown to be the necessary consequence of the moon's attraction upon the earth. Newton had already, in the "Principia," given 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 variation of the inclination to the ecliptic. It was seen by Newton, that on the supposition of the mutual attraction of all the particles of matter, the action of the heavenly bodies on the protuberant parts of the earth must produce exactly the same effect on the motion of those particles which disturbed by the force of the sun, for instance, produces on the moon. He thus explains, finally, the precession; secondly, that part of the nutation of the inclination which depends upon twice the longitude of the equator, the disturbing body. This explanation (prop. 66, corollaries 18-22) is substantially 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 attracted 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 then 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, let the earth be a perfect sphere in revolution, suppose for example at the equator, as is the case, 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)
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; nor may let a small spherical mass be equator at Z. There will therefore move round the mass C in and with the equator. The consequence will be [Gravitation, section viii., vol. xi., p. 393], that the node of this orbit (the equinox A) will regress, or move directionally, opposite to that of the rotation, with the same inclination as that of the orbit will alternately increase and diminish, being greatest when the line CM passes through one of the equinoxes. If we put such satellites all round the equator, the effect of them will be something increased in magnitude; and if we fill up all the protuberant part of the spheroid, the effect will still be of the same sort, though further increased in magnitude. The effect of 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 protuberance 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 at C over all parts of the sphere will render M less efficient in the alteration of the direction of the axis. I suppose that the precession and nutation may arise from the consideration of the protuberant part of the spheroid as a fixed satellite to the internal part; but the proof that the precession and nutation do arise consists in taking a strict mathematical process, investigating the effect of the precession and nutation, and showing that the results agree with those of observation.

But, as before noticed, the largest part of the precession 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 the revolution of a plane, the precession and nutation 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 then the orbit should be greater than that of the planet itself in a fixed orbit ought not to be surprising, since there is no a priori reason why it should be either greater or less.

Throughout this system the completion of one action on a second, 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 by another method, than do the moon's measurements on the earth generally agree with one another, while both agree very 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.

PREDESTINATION is the decree of God by which he has from all eternity predetermined whatsoever shall come to pass. That the whole universe is governed by a fixed plan, and that all events are tending to the accomplishment of certain results, it makes no part of the doctrine of predestination, of God, and of his character as the being who 'created all things, and for whose pleasure they both are and were created.' (R. iv., 11.) To suppose that any events can result either from a necessity or from a chance opposed to the divine will is evidently to assume a limit to the power of the deity. Some theologians have indeed maintained that though God is possessed of the attribute of infinite prescience, yet with respect to his willing to make all things, he must consider every event, and thereby impair his character as the ruler of the universe. This notion also involves another absurdity; for if God wills to be ignorant of anything, it must be because there is something which God could do, or know, and thereby make himself less than perfect; and we must never lose sight of this, and therefore the nature of the thing must be known to God before he can determine not to know it.

In its relation to the present powers and the future state of men, the doctrine of predestination has been the subject of the most violent and entangled controversies. An account of the extreme views entertained on the one hand by Augustin, Calvin, and their followers, and on the other by the Pelagians and Arminians, has been given in the articles ELECTION and PELAGIANISM; but the opinions of Dr. Edward Williams, which, under the name of Modern or Moderate Calvinism, are now generally held by Calvinistic divines, have been sufficiently noticed in the article ELECTION. We have, therefore, to examine the position of the modern Calvinists:—What we maintain is, that all mankind are in a state of guilt and sinful imbecility; that God foresaw this from eternity; that he therefore predestinated an adequate remedy in the sacrifice of Christ; that this sacrifice should be realized as a unifying act of justice and love; and that the way to accept this sacrifice is the way to the knowledge of God and the way to the right of peace. To judge in a state of personal or universal sin, is to make no progress; to judge in a state of personal or universal sin, but to become personally just, is to make no progress.

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 had 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, 'what never can be proved, that non-elects implies a 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 things to be is inconsistent with the notion of decree not to be, and it is not to be hindered, but to decree not to hinder is the same thing as to decree to do nothing; or, as before, to decree not to decree. The fallacy consists in the supposition that non-election is a positive idea, and not merely a negation, determination by way of decree.' (Ibid., p. 306.) This objection holds against the modified form of the doctrine of reprobation, which is called preterition, namely, that God decreed to choose some and to pass over the others. It should be carefully noted that the doctrine of predestination knew 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 a great difference whether the character of God, and his willingness to create all things, and for whose pleasure they both are and were created.' (R. iv., 11.) To suppose that any events can result either
created being; and that therefore the defects, and among 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, Aristotle answers, that the actions, even of 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, which he makes his 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 (καταγραφα, ἀφανιστατικη) is applied in logic to general names, considered as capable of being the predicates of propositions. [On Predication, see Organon, p. 3.] The classes of predicables usually recognised by logicians are five, viz., 1. Genus; 2. Species; 3. Differentia; 4. Proprium; 5. Accidenz, which Latin names are translated from the Greek, 1. γένος; 2. ἔδοξα; 3. ἀνικτος; 4. λογικη; 5. ἑκατοστος.

The five-fold classification of the predicables does not occur in Aristotle's Organon; or any other of his extant writings; and it probably did not occur in any of his lost writings. The classification first given by Aristotle to signify a difference: we do not however recollect any instance of an actual use of the word ἀκηθος in the sense of a logical species in his writings. In his Nicomachean Ethics, b. i., 4, a, he applies the word ἀκηθος to the ideas (or supposed archetypal forms of general nature); but this is preserved, that the word ἀκηθος (or καταγραφα) is often used by Aristotle to signify that which is contingent or accidental, in opposition to that which is necessary (αφανιστατικον).

The earliest work which contains 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.) to assist his pupils in his extant works. (Concerning Michael Psellus, see pp. 3, 4.) The five predicables (ατοιτοι δοκιμαι, as they were designated by Porphyry) are not however retained in Bekker's Aristotle, vol. i., 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 words on the categories; and he therefore addresses to a certain Chrysias a popular account of them, derived from the antient philosophers, especially the Peripatetics. (Concerning Chrysias, see David, ib., p. 16.) The five predicables (ατοιτοι δοκιμαι, as they were designated by Porphyry) are not however retained in Bekker's Aristotle, vol. i., 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 words on the categories; and he therefore addresses to a certain Chrysias a popular account of them, derived from the antient philosophers, especially the Peripatetics.

PREDICAMENTS, or CATEGORIES, are certain heads of generality, or propositions which are contained in the treatise by Aristotle which stands first in the extant series of his logical writings. [Organon, p. 9.] The following are the predicaments, or categories, as classified by Aristotle: 1. substance (οικειον); 2. quantity (τα μεγεθη); 3. relation (τα τοιαυτα); 4. quality (τα καταλειμματα); 5. opposition (τα οπσιαιμενα); 6. priority (τα πρωποιμα); 7. simultaneity (τα ηπειρα); 8. motion (την κινησιν).

The most important part of Aristotle's treatise on categories is that which relates to σεια, or substance; since it contains a discussion (and tolerably clear explanation) of the origin of general notions. It proves that Aristotle did not adopt the theory of realism, although realistic expressions are frequently employed 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 abridgement of Aristotle's treatise on the categories may be found in Barthélemy Saint-Hilaire's Logique d'Aristote, tom. i., p. 148-92. See also Ritter's Geschichte der Philosophie, vol. iii., p. 76.

PREDICATE. (Organon.)

PREFIX, PREP. [DEPARTMENT.]

PREFIX. [LANGUAGE.]

PREHINITE, a mineral which occurs crystallized and massive. Primary form a right rhombic prism. Clevage perfect with three cleavage planes. Fracture uneven. Hardness scratches glass easily. Becomes electric by heat. Colour white, grey, and various shades of green and greenish brown; often delicate; thus, according to Campion, 4; compact, with rough surfaces. It occurs also in rolled masses.

Before the blow-pipe it is converted into a white smoke, 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. Kouphtolite occurs at Barèges, department des Hautes-

Vol. XVIII.—3 S
Pyrenées. The annexed analyses of Kounpholi are by
Vauquelin (1) and by Laugier (2):

<table>
<thead>
<tr>
<th>Element</th>
<th>Vauquelin</th>
<th>Laugier</th>
</tr>
</thead>
<tbody>
<tr>
<td>Si</td>
<td>48</td>
<td>48.50</td>
</tr>
<tr>
<td>Al</td>
<td>24</td>
<td>25.00</td>
</tr>
<tr>
<td>Li</td>
<td>23</td>
<td>20.40</td>
</tr>
<tr>
<td>Cu</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Sulfate of iron</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Potash and soda</td>
<td>0.67</td>
<td>0.75</td>
</tr>
<tr>
<td>Water</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

PRELATE (etymologically from pra and latus), a person preferred or advanced before another; but it is confined to a particular species of preferment or advancement, namely, that amongst the clergy, and it is applied to those only amongst the clergy who have attained the dignity of that of bishop or archbishop, to which we may add patriarcho, in such churches as have an officer so denominated. The word prelate has however in ancient times been applied to simple priests, members of the clerical body in general.

PRELUDE (Prolegom, 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, an extemporaneous effusion, and as such is no bad test of the musical knowledge of the performer.

PREMIA. [ORGANON]

PREMIUM (in the sense in which it is used in the article BOUNTY) 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 thing 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. Adam Smith says of premiums that 'by encouraging extraordinary dexterity and ingenuity, they serve to keep up the emulation of the workmen actually employed in those respective occupations, and are not considerable enough to turn towards any one of them a greater share of the capital of the country than what would go to it of its own accord. Their tendency is not to overturn the natural balance of employments, but to render the work which is done as a premium more profitable; and with an expense of premiums, besides, is very trifling; that of bounties very great.' (Wealth of Nations, book iv., chap. 5.)

PREMNA, a genus of plants of the natural family of Verbenaceae, which is characterised by a cup-shaped calyx, 5-lobed, and bluish-coronate. Statice 4, didynamous. The group is shaped, with a four-celled nut. The species consist of shrubs and small trees, which are indigenous in Asia and New Holland, having opposite leaves, inflorescence in terminal cymes, with small flowers.

The majority of the species are remarkable for the fetic odour of their leaves, though those of P. cordifolia are somewhat fragrant, and those of P. esculenta are employed as diet by the natives of Christchurch. P. integrifolia has roots of a burning taste, with leaves of a hiscine odour. The leaves, applied to the head, are said to cure headache, and a decoction of the roots is employed as a stimulant in fevers, diarrhea, &c. P. laevis has wood of a white colour and firm texture, employed for various common purposes, in which it agrees in character with the teak tree, Gmelina arborea, and others which belong to the same natural family.

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. 1100, and in the diocese of Loon in Picardy, a place so called because pointed out, as it 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 white cassock, with a rochet over it, a long white cloak, and white capa. They were at first sent into England shortly after A.D. 1140, and settled first at Newhouse in Lincolnshire. They had in England a con-

severalor of their privileges, but were nevertheless often visited by the visits of Premonstratens, who raised great contributions out of them, as the generals or foreign heads of the Cluniacs 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 the canons that resided from visiting their charge 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 England maintained under the jurisdiction of the abbot of Premonstraten and the general chapter of the order till A.D. 1516, when they were exempted from it by a bull of Pope Julius II., confirmed by King Henry VIII., when the superiority of all the houses of the Canons of the White Cloak in England was given to the abbot of Welbeck in Nottinghamshire. They 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. (NOTIONAL, NOTIONAL) Notional words are those which express notions, and which are 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 town and with his friend 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 as 'a part of speech denoting some relation between ideas; and so far as it is used, 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 such words as 'in' and 'with,' were not influenced by certain ideas. Harris, however, used by words that had a significant meaning, 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, and there is no need, 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 simple words without any significant meaning, and that they simply united ideas of the same word altogether.

Prepositions are so called because they are preposed or prefixed to the word to which they are annexed. The name is an unfortunate one, since they are sometimes postponed or placed after such words, as in whereas, wherein, whereasfrom, thereby, &c. In languages like our own, which have hardly any inflections, the relation which prepositions express is conveyed by means of prepositions expressed by means of 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 nouns. 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 (is placed after the Latin word for king, filius regis). But the meaning of these case-endings was not always definite enough, it became customary 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 aed 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 prepositions admit only eighteen, the Latin about fifty. In English the following words are usually considered as prepositions:—above; about; after; against; among; amongst; amid; amidst. The preposition of, the following, behind; beneath; below; beside; by; down; for; from; into; in; near; of; off; over; on; upon; since; through; throughout; till; until; to; unto; toward, towards; under; underneath; up; with; within; without. Beside, beside of, besides, beside the, beside of, beside of the, besides the, besides the of, besides the of the. In Latin, Greek, and many other languages certain particles never found singly, or uncompounded, and which are therefore...
called inapplicable prepositions, as in English be, for, fore, mis, &c., which occur in such words as be-stir, be-speak; for-ak, for-sake; fore-see, fore-know; 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. The word is of obscure origin, and not perhaps quite accordant with the analogies. Prae and rogo would seem to give the sense of precedence in asking, while prerogative means precedence in being asked, the right to ask. The first term, the party in whom the prerogative is vested, before any change shall be made in the matters comprehended within the prerogative. The term is confined to cases of dignity, to things indeed which, in a political state, are bound to stand together in a political state; and though we 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 from time to time given. He is also the sole judge in any change 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 to be prerogative were, in 1624 for instance, are only accessory to this the true prerogative, or things which have naturally shrunk 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 indexolotus 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 has been changed or applied, it now denotes not only the privilege of being consulted in any intended change of the law, and the consent obtained, but the right of making war or peace, of laying embargoes, of commissioning officers in the army and navy, of sending and receiving ambassadors, of making treaties, of bestowing honours, conferring rank, and creating peers. To these are to be added the regulation of the coinage and of weights and measures; the pardoning of offenders, a power sometimes called the exercise of the prerogative of mercy; the calling, proroguing, and dissolving parliament, in which however the king's prerogative has been restrained by positive enactments; and, lastly, various rights which the king enjoys in respect of the crown lands, as that he is the sole owner, with all appurtenances, of the rights of the crown lands. It is the thing 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, the College of Justice, or the Council of State may be privy or consulted; or, the ministers, 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, those 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 community 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 as falling on his crown—any part of his prerogative 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 watch them.

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, regarding perjuries, and other sorts of administration. Its jurisdiction attaches where one dies possessed of bona notabilia, that is, of goods to the value of 5L (except in the diocese of London, where it is 10L) in one diocese or peculiarity, and also goods, altogether of the same amount, in some other dioceses or dioceses, peculiar or populous, within the same provinces, or where one, not being 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 other dioceses; the other dioceses are the dioceses of the several archbishops, and the means of the Prerogative Court, one administration becomes sufficient; and the inconvenience and uncertainty of taking administration out in various dioceses, &c. are avoided. Where a death takes place outside the province, but not in England, in one of its dioceses exclusively, the prerogative and diocesan courts have concurrent jurisdiction. A probate of the will of a bishop must in all cases be prerogative. A prerogative probate can be granted in several dioceses, &c. is only valid: but a diocesan probate, where there are, is absolutely void. (4 Inst, 335 Williams On Executors, &c.)

PRESBURG, Plauunum (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 view over an extensive plain watered by the Danube, and the horizon being open in all directions except towards the north-west, where it is intercepted by distant mountains. The Danube is here 139 toises wide, and is crossed by a bridge of boats 363 paces in length, which was substituted in 1822 for the old, which was entirely 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. For a short time it was a chief city, and was an important 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, Olen having been taken, the city was granted to the Magyars, and in 1559 was declared the capital of the kingdom, and the diet were held here till the year 1784, when Joseph II. decided that the viceregal and palatine, with the high officers of government, should reside at Olen, as a more central 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 now for the greatest part deserted by Pesth, in political importance by Olen, and in population by Debrecyn. Including the suburb of Blumenthal, with the Zuckermendel and the Schlossberg (which belong to Count Fulpi, and are not properly parts of the city), the diameter is only recently estimated, the population of 38,889 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, for the vast number of boats that navigate the river from Vienna to its mouth, and thence to Constantinople, will prove very beneficial to Presburg. 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 gymnasmum, a royal national model school, several other schools (one of them an infant-school), an hospital, and the great library of Count Appony, of 50,000 volumes, three monks' convents, and two nunneries. The rivers in the city, 439 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 Slavonian. There is a good agreeable society at Pres burg, in consequence of the many magnates and nobles, of officers living on their pensions, of clergy, and professors. The chapter, consisting of twelve canons, is ancient, and well endowed; the revenues are various, such as wool, silk, tobacco, snuff, oil, rosoglio, and some tanneries, but all on a small scale. The environs of Presburg are very agreeable, and there are numerous places of amusement and publication. One of the remarkable sights of the town is a great hill, or mound, of considerable height, to which the king of Hungary rides after his coronation, and brandish 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, Gemälde der Oesterreichischen Monarchie; Hasel; Stein; &c.)

EPISTREMIES (πρεσβύτερος, an elder) are professors 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 among themselves; that Presbyter or Elder, and Bishop, are only different names for the same person; and that Deacons are laymen whose office is chiefly to take care of the poor. A Presbytery (πρεσβυτεριον) they regard as a society of clerical and presbyterial persons, or of Ministers and Lay Elders. In support 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 implanted 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 made use of in France, which was brought into Scotland by John Knox into his native land, though not in precisely the same form as that which was afterwards given to it. King James I., who had been a Presbyterian in Scotland, and who embraced Episcopacy upon coming to the English throne, did not regard it as a principle on which it is proper to insist. The Kirk of England in Scotland. In the reign of Charles I. Presbyterianism regained the ascendency, but Episcopacy was once more declared the established religion at the restoration of Charles II. 1665. At this time Presbyterianism was revised and reorganised, and subsequently 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. It is supposed that all persons who belong to the church, whether ministers 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 minister or congregation to examine, instruct, rebuke, admonish, and suspend them from the Eucharist. The Kirk 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 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 Synod, of which there are 15, meet twice in the year, and are composed of the ministers of each of the provinces which give name to the Synod. The highest authority is the General Assembly, which meets annually. This is composed of delegates from each Presbytery, from every rural borough, and from each of the Scottish universities, 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 nominated by the state. The King, the Bishop, the Moderator of the Kirk and the Kirk are not allowed to speak in Parliament, and no instrumental music. Its doctrine is Calvinistic. At the Revolution the Westminster Confession was adopted the standard of the national faith, and it was enacted that no person be admitted or continued a minister 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 teachers bearing office in any of the foundations of Scotland.

There are however many Presbyterians in Scotland who do not belong to the national establishment, and who are called Seceders. But they maintain the same articles of faith as the members of the Kirk, and hold Associate Synods for regulating matters of discipline. They secede, 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 the year 1649 the Presbyterian Kirk was constituted permanent and established, and the Church was Presbyterian till Episcopacy was restored with the restoration of Charles II. in 1660.

There are still congregations in England called Presbyterians; 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, 'adopt nearly the same mode of church government with the Independents; but their chief difference is, that the Independents is, that they are less attached to Calvinism, and consequently admit a greater latitude of religious sentiment.' (Broughton's Bibliotheca Historico-Sacra; Williams's Dictionary of all Religions.)

PRESCOT. [Lancashire.]

PRESCRIBED. '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.' (Liti, § 170.) According to this passage, 'time out of mind,' and 'prescription,' is another essential to custom is 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 fact that it is not derived from a difference of the right. This claim is called prescription, because the plaintiff or defendant who makes it 'prescribes that,' &c.; stating after the word 'prescribes,' the nature of his claim.

The following is an example of a prescription in Liti, 114, 4:—'I S. of the manor of D. in feo, prescribes thus: that I. S., his ancestors, and all whose estate he hath in the said manor, and used and to have common pasture there; and the same use and custom hath been of time out of mind within the same manor, by which all the copyholders of the manor have had and used common 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 many persons, serving as the mark of a 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 claims a use, common or particular, in a place, by his ancestors, or by his predecessors as representing him, his sors, 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 successors 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, as it is intended that 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 parishes or townships may prescribe in a matter of easement, as a way to a church-yard, not for a part 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 be certain and must be out of mind, or beyond the power 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., which is the earliest period of English legal memory. If it can be shown, either by evidence of persons living by record, or writing, or by any other admissible evidence, that the alleged usage began since the first year 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 that it is consistent with an established principle of law; for instance, it is said that a sheriff cannot prescribe for taking gifts for doing the duties of his office. It follows generally, that there can be no prescription to do any wrong or commit nuisance, or for a thing not such as has been done with unauthorised and unpermitted use, and is against the king's right (subject to the limitations hereafter mentioned), conformably to the maxim, Nullum tempor operius regi; yet a grant from the crown may be prescribed for.

Where a man prescribes for a thing which cannot be granted or alienated without deed, he must prescribe in himself, and in the ancestors of his heir; and he cannot prescribe in himself and those whose estate he hath; for he cannot have their estate without deed or other writing which ought to be shown to the court. But of things appurtenant to an manor or to other lands or tenements, a man may prescribe that he and they whose estate be hath, have been about to hold such thing appurtenant to the manor or to such lands and tenements time out of mind of man. And the reason is, that such manor or lands and tenements may pass by alienation without deed. (Litt., § 183.)

From this, 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 is that it is mentioned in the parcel, and to all franchises and privileges which he may have, without a title appearing on record, as for wafis, eastrys, wrek, treasure trove; and to have a park or warren, to have a fair, market, or right toll, certain.

Nothing can be prescribed for at the present day that may not be the subject of grant; for the allegation of usage time out of mind must be usage of something which could originate in a lawful way. When, then, the claim of prescription is made within the prescribed years, it is the case 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 parcel of land or islands, with a forein right of way may not exist together with a public right of road. (Bliswell t. Tregonning, 3 A. and E., 586.) If all prescription supposes an original grant, it is an inconsistency to suppose a grant to A, and a grant of the same thing to A without that to whom the service or benefit was given.

There is some confusion in the books as to prescription and custom, and the real distinction between them has perhaps not always been observed. It seems immaterial whether the thing whose original is unknown is called prescription or custom, for the two incidents of time and usage belong to both. Still there is the distinction as to the persons who claim, which has been already stated; and there is of course a difference in the evidence, which results from the difference in the persons claiming, or in whose right it is claimed.

A prescription may be lost or destroyed in various ways. If the thing is respected, which is the case in prescription, it is presumed that the prescription also is destroyed. A franchise by prescription is destroyed if the same liberties are granted by the king by charter. It may be lost by non-use. But a prescription is not lost by changes which are immaterial and do not affect the nature of the claim; thus if a man prescribes for a watercourse to a fulling-mill, and he converts it into a grist-mill, he does not lose his right, which is generally to have a watercourse to a mill and to use it, and a convert is a copright and afterwards have a new name, it would not lose the right. (4 Rep., 86.) When the ownership of the land and of the thing claimed out of or upon it are united in the same person, the prescription is lost.

Recent acts have made some alterations as to prescription, and limited the time within which actions can be brought or suits instituted relating to real property. The 3 & 4 W. IV., c. 27, applies to every thing of corporeal nature, which is land in the sense in which land is interpreted in that act; but it only applies to those kinds of property of an incorporeal nature, which are advowsons, annuities, and rents. The 2 & 3 W. IV., c. 100, applies only to cases of modus and exemption from tithes. The 2 & 3 W. IV., c. 171, Act 4 & 5 W. IV., c. 134, 'An Act for the Registration of Prescription in certain cases,' applies (§ 1) to 'claims which may be lawfully made at the common law by custom, prescription, or grant to any right of common or other profit or benefit to be taken from or upon any land, &c., except rents paid for, and except, tithes, rents and services; ' (§ 3) 'to any way or other easement, or to any watercourse, or the use of any water,' &c.; and (§ 3) to the use of light. No claim to the kings comptual lands is applicable to this statute, whether of profit or benefit (as is mentioned in § 1) shall have been actually taken and enjoyed by any person claiming right thereto, without interruption for the full period of thirty years, be defeated or destroyed by showing only that such right, profit, or benefit was first taken or enjoyed at any time prior to such period of thirty years; but nevertheless such claim may be defeated in any other way by which the same is now liable to be defeated; and where such right, profit, or benefit shall have been so taken and enjoyed as aforesaid, for the full period of sixty years, the right thereto shall be deemed absolute and indefeasible, unless it shall appear that the same was taken and enjoyed by some consequence of prescription. As to the right to light, the statute provides that 'when any land or water upon, over, or from which any such way or other convenient watercourse or use of water shall have been enjoyed or derived, hath been or shall be held under any term of life, or any other term which is perpetual or assigned by the time of the 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 the case claim shall within three years next after the end or 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 claiming right of an estate and had not the fee, to claim in the name of the person who had the fee, but under the last-mentioned act 'it shall be sufficient to allege the enjoyment thereof as of right by the occupier of the tenement in respect whereof the same is held, without such claim or allegation of title, and the act as may be applicable to the case, and without claiming in the name or right of 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 duchy of Lancaster or of the duchy 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 thirty years next before such prescription made.' This statute prohibited any claim being made by prescription unless there had been seisin or possession within sixty years; but it still allowed the commencement of the enjoyment at any time within legal memory before the sixty years to be proved. The recent statutes respecting periods of years therein mentioned shall be deemed to be the period next before some suit or action wherein the claim or matter to which such period may relate shall be pleaded; and the statute includes proof of commencement of enjoyment, and it only gives the absolute right, when the several periods of years reckoned backwards from the time of some suit or action wherein the matter is brought in question, and completely, not only excluding all right of nor giving the absolute right if there has been an interruption, within the meaning of this statute, which has been submitted to or acquiesced in 'for

* Richards v. Fry, 7 A. & E., 506.
one year after the party interrupted shall have had notion thereof, and of the person making or authorising the same. In these cases, if there has been a breach or possession 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 must not be thought 'of a manor, a court leet, a liberty, separate jurisdiction, treasure trove, wreck, waifs, and other forfeitures, fair, market, fishery, toll, park, forest, chase, or any privilege legally known as a franchises, as well as being the remaining of the title, is to be considered under the description of dignities or offices.' (Mr. Hewlett's Reply, &c., to certain Evidence before the Select Committee of the House of Commons on Records, February, 1836.)

This is an excerpt from a document 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 (Dug., 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 'corporal things' by the laws of the Twelve Tables usucapio of moveable things was complete 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 prescription, that is, an exception (p. 40) to the limits of usucapio, by which, if he made his demands against a defendant, for the purpose of limiting or qualifying his demand. It seems afterwards to have been used as equivalent to exceptio or pler. Barcley, c. 23, treats of ownership acquired "sine titulo et traditione, et per usucapiendum, s. per longam continuam et pacifam possessionem," but he adds that no time was legally fixed as necessary to make the title perfect. In the discretion of the justices appears then that the rule as to 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 possession, as above defined by him, "sicut jus parit jus possidendi et tolit actionem vero domino potestati," 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 things incorporeal, and by his own law, and alia et servitutis per patiemantiam quibus tractatur ad consensum, et longum usum et pacem. Bracton then makes no distinction between a thing corporeal and incorporeal as to the mode of acquisition by possession and long usage, nor does he use the word prescription.

(Comyns, Prescription; Viner's Abridgment; Starke, Law of Evidence; Blackstone, ii. c. 17.)

PRESS. [PRINTING-PRESS.]

PRESSURE. To explain the use of this term in mechanics we must remember its previous and common use. When we attempt to move matter, 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 difficulties in the way to give to touch a sense 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 say 'pressure' (the wrong), and an idea of the enormous pressures which are created in common cases of collision. If a column of iron three inches high, be let fall on an anvil two feet high, from a height of eight feet, the compression of both hammer and anvil is about one-thousandth of a foot, and the pressure at the moment is that of a quiescent column of iron similar to the hammer in its action, but of no less than 4000 feet high.
PRESTON, [Rug.oshaire].—Preston Joan, 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 Persia and the Mongols, and afterwards spread into Persia, India, and Tartary, and were protected by some of the Christian sovereigns of those regions. [Nestorians.]

Oungh, a powerful Khan of the Keraites, or Kirt Tartars, in the eleventh century ruled over a great part of Eastern Tartary, north of the Chinese wall and near the banks of the river Hingh. His residence was at a place called Karakorum. Some of the Mongol khan’s, and among the rest Temugui, afterwards called Genghis Khian, paid allegiance to Oungh Khan. [Genghis Khan.] A war broke out between 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. (Petits de la Croix, Histoire de Genghis Khan.)

The first European traveller who mentions Prester John was a Franciscan friar, called John Carpinus, who was sent, in 1246, nearly half a century after the death of Oungh Khan, by Pope Innocent IV., to the court of Genghis Khan in the son of Genghis, to induce him to restrain the Mongols from their predatory incursions into Russia, Poland, Hungary, and other Christian countries. Carpinus did not meet with the Prester John, as he supposed, but lived elsewhere far to the eastward. Several years after Carpinus’ journey, another Franciscan monk, called Rubruquis, was sent by Louis IX. of France, who was then in Palestine, A.D. 1254, as a missionary to Tartary. The story is that the chief cause of the mission Rubruquis, after great difficulties and privations, reached the camp of Batou Khan in Central Tartary, who forwarded him across the desert to the court of Mangou, the great Khan of the Tartars, and he met with no difficulty or opposition from John, but he found some Nestorian priests, as well as some Mohammedan imams, 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 Damascus to the Franciscan in Cyprus, whose adventures, and curious narrative, which he addressed to Louis, who had returned to France. This curious narrative is written with such simplicity and greater veracity than that of his predecessor Carpinus. It is printed in Purchas’s collection of travels, and in Bergeron’s ‘ Voyages faits en Asie, par Benjamin 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 Nestorians on the coast of Malabar. At last Pedro Covilha had heard that there was a Christian prince in the country of the Abbessines (Abissinia), 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 Hadhbeh, who was then in Shoah. [ Abyssinian Christians.] It must be remarked however that the ‘negus’ or king of Hadhbeh had never assumed the name of Prester John in his recovery in 1841. Ludolf, b. xi.: Tellez, Historia Geral de Ethiopia, b. xi.

PRESTON, a town in Lancashire, in the hundred of Amounderness, on the northern bank of the Ribble, about 15 miles above the mouth, and is divided by a direct line north-north-west of the General Post-office, London; 321 miles by the Birmingham, Grand Junction, and North Union railways (a distance traversed by the day mail in 10 hours); or 213 miles by the coach-road through St. Alban’s, Stony Stratford, Daventry, Coventry, Lichfield, Newcastle-under-Lyme, Knutsford, Warrington, and Wigan.

Preston probably arose out of the decay of Ribchester (probably the Coecium of the Antonine Itinerary), now a village about 10 or 12 miles higher up the Ribble. It was held by Tom and Don, sons of one Prester, 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 an early hospital here; and Edmund, Earl of Leicester, son of Henry III., founded an hospital for Grey or Franciscan friars; but from what foundation or at what period the town derived its name (Preston, i.e. Priest’s town) is unknown. The town was in the hundred of Blackpool, and the Scots, in one of their incursions into England (A.D. 1322). In the great civil war of Charles I. a severe action was fought near the town on Ribbleton Moor (A.D. 1648), when the Duke of Hamilton, who was bringing an army from Scotland to aid the royalist cause, was routed by Cromwell and Lambert. In A.D. 1715, the Jacobites insulants from Northumberland, under Forster (Northumberland), took possession of the town; but after a brave resistance were obliged to surrender to the royalist forces. In the subsequent insurrection of 1745-46, the Jacobites passed through the town in their retreat; they attempted to entrench themselves here, but withdrew on the approach of the Duke of Cumberland. The town is on an eminence rising from the north bank of the river, and consists of a number of streets irregularly laid out, but tolerably well lighted and paved. Half a century ago Preston was but a pleasant village, a district, in which it owns the number of several families resident in the neighbourhood, to its being the seat of the law courts of the duchy of Lancaster, and to its comparative freedom from the bustle of trade and manufacture. The town is in the county of Lancashire, and its good houses. Since then its character has materially changed; it has become the seat of a considerable cotton manufacture; and factories, some of them on a very large scale, have been established. About two-thirds of the houses are at 5l. or less: they are however generally neatly and substantially built of brick, and many are handsome and of large size. Near the town are several handsome villas. The town is supplied with water by an incorporated company. There are several pleasant walks in the neighbourhood, and a waste called ‘the moor’ adjacent to the town, containing 240 acres, over which the royalist and the burgesses used to run the right of common. The town has lately encroached and laid out in public walks for the recreation of the inhabitants. There are two bridges over the Ribble: Walton bridge, on the road to Chorley, Wigan, and London, a neat bridge of three arches, built A.D. 1772; and Preston bridge, five miles from the former, a neat bridge of five arches, built in the middle of the last century. The parish church was formerly dedicated to St. Wilfred; but the structure has been rebuilt, and dedicated to St. John. It has a square embattled tower, erected A.D. 1814, with clustered pinnacles. It will hold 1500 persons. St. George’s church, built above a century ago, is a brick building, capable of containing 1000 persons. The church of the Holy Trinity capable of containing 1250 persons, was built A.D. 1814. St. Paul’s in Park-street, and St. Peter’s in the Fylde-road, are both Gothic, churches erected within the last few years by grants from the Parliamentary Commissioners: they are capable of accommodating 1250 persons each. There are several disagreeing places of worship; and in the town two Roman Catholic chapels, one of them a very elegant building. There are a custom-house, a town-hall (a neat building of brick), a county sessions-house and house of correction, a modern and convenient building for the debtors’ prison for the borough; a commodious lock-up house, a neat theatre, a handsome suite of assembly rooms, warm and cold baths, a building for the dispensary, and a house for the study of medicine.

The parish of Preston comprehended in 1831 an area of 14,230 acres and a population of 36,336. It was subdivided into nine chapellies or townships: the borough and township of Preston containing 5,472 acres, and 32,456 inhabitants. By the Boundary Act the township of Fushwick (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
brought 1,550 acres; the population 35,387. Subsequent increases are varied, but the island's total population now stands at 40,000. The number of houses in 1831 was 6723, 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 with the west coast of America, for sugar and rum. Since 1800 the trade of Preston has increased, and in 1851 the number of sugar and rum was 150 tons; but it is ill adapted for trade; the shipping which frequents 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 navigation 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 Great Junction and London and Birmingham railroad 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, is to connect the Preston and 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 the Ribble to the Cheshire canal, 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, one on each of the town's 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 fair for sheep.

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 interfere. Quarter-sessions are held here 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 Meeting, is held in the corporation, every twenty-one years; 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 the members of the corporation, led 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 for the Borough of Westmoreland, and its seat, about which its privileges 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 £650. The perpetual curacies are of the following clear yearly value:—St. George, 161s.; St. Paul, 59s.; St. Peter, 10s. Trinity, 58s. The cure of St. Peter's has a glebe-house.

The township of Preston contained, in 1833, an infant school with 135 children; twenty-seven dame-schools, with 315 children; an endowed school (the Blue-Coat school), with 25 boys and 25 girls; five subscription charity-schools, with 765 boys and 553 girls; thirty boarding or day schools, with 1230 boys and 500 girls; such schools as with 2226 boys and 2421 girls. Most of these Sunday-schools have lending-libraries attached. There was no school in Fishwick township. In the parish, there were two dissenting schools, with 118 boys and 45 girls; two other day-schools, with 49 children, 23 boys and 26 girls; and five Sunday-schools, with about 280 children. (Aikin'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 on the north. 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 New Cuthill or Kuitile. It is a straggling dingy town, chiefly consisting of a few houses, and a grand mansion of a heraldic tart, and studded here and there with salt or other manufactories, which keep the place almost continuously enveloped in smoke. (Chamber's Gazetteer of Scotland.) There is a town hall erected in 1821 by the late Lord Glenconner.

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 Dolphinston 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 of 1745. On the 21st 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 joined by another detachment of the insurgents. The troops had scarcely time to form in order of battle, when they were charged by the Highlanders: the line was broken by their impetuous onset; the cavalry were thrown into the river, and put to flight. The infantry, tents, baggage, and ordnance, were all taken by the insurgents, who lost only 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. The prisoners, baggage, and ordnance of England by them. It forms a striking incident in Sir Walter Scott's novel of 'Waverley.'

PRESUMPTION. A presumption is a very defined term. The following is its 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 others which are known. (Starkey, 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 shown by direct evidence, the fact may be proved by indirect evidence, from which the fact in question may often 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, 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 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 possibly be disproved; from which the inference is wanted, and yet the inference is still only probable.

Presumptions which are necessary can hardly ever be considered to be conclusive of the fact proved, as such presumptions which are only probable may 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 in some cases the disproof is only supposed; and yet the inference is only probable, positive law may give it the same conclusive force as a necessary presumption.

A presumption, when established, that is, a fact when presumed, 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 it is annexed, 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 then of a presumption, in a legal sense, is only the establishment of a fact to which certain legal consequences are annexed.

In our own system, the presumption is sometimes made by a judge or a number of judges, and sometimes by a jury, but the consequences are the same. Some write that a presumption 'is an opinion or a natural inference.' 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; such an presumption is that 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, so long as the bond is unimpeached, that is, so long as it is deemed to exist. But though the law presumes that a bill of exchange is 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 presump we have added the consequences which the law and the rules of practice require in cases in which such a presumption is made. They are annexed to any defined predicament of facts, the law in effect indirectly annexed to that predicament the legal consequences which belongs to the presumed fact.

The presump of law is stronger than any presumption 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 act of parliament, that is, 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, is 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 accidentally bruised and died in the course of nature, and 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.

Other are artificial presumptions which are recognized and warranted by the law as the proper inferences to be made by juries under particular circumstances.' (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 the inference (made by the judge) 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 still such as a jury may make (at least under certain circumstances), and their verdict will be good. 'Thus a jury is required, or at least advised by a court to infer a grant of an incorporeal hereditament after an adverse enjoyment for the space of ten years and ten months.' (Starkie, p. 1241.) Only in one case 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 yet when the court advise the jury to make whenever the presumption stands unrebutted by contrary evidence. Such evidence in theory is mere presumptive evidence; in practice and effect it is a bar.'

They yet claim under the head, 'the most natural presumptions of mere fact.' 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 course of nature and the 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 jury may make without the aid of any previous rules of practice, by which some judicial decrees, or in which any new case the court upon due consideration will make, and if necessary will direct the jury accordingly.

In those courts where there is no jury, one ground of the classification made by Starkie does not exist, and the judge makes his presumptions either in conformity to the technical rules of his court in cases to which they apply, or he makes his decisions in cases not covered by these technical rules, just as a jury does or any indifferent persons do upon facts submitted to them for their consideration.

Presumption then is either a positive rule by which a certain conclusion is drawn from the facts proved, or by the judge under the direction and advice of the judges, to follow from certain other proved facts; or it is a conclusion from certain other proved facts which a judge or a jury may make if they find the probative force of the proved facts sufficient to induce them to make it. The inference called by Starkie 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 are artificial 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. (Dig. 32, 3, 25.)

(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 Arsa, in 38° 27' N. lat. and 26° 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. (Italy, 176, 250.) The Albanians seized it in 1778, and in 1798 came with them into the hands of the French by virtue of the treaty of Campo Formio. The French garrison (less than 1000 strong) and the townspeople marched out to encounter the assailants, but were entirely defeated by the Albanians, who took and plundered them. At this 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 streets are deserted, and the churches except one, were destroyed. Ali made Prevesa his chief naval station, fortified the town with new works, and adorned it by the finest palace or seraglio in his dominions, built at the entrance of the town. Some new and
handsome houses were built by the Turks and Albanians who settled here, but Prevesa has never recovered its prosperity under the Turkish yoke. In 1825 the town suffered much from an earthquake.

Prevesa was a port, and 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; capes, or Albanian cloaks, are also important articles of trade. Prevesa is near the mouth of the Vlassa, 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.)

PRICE

PRICE, RICHARD, was born at Yton in Glamorganshire, February 23, 1723. His father Rice Price, of whose second marriage Richard was the sole offspring, was a rigid Calvinistic minister, remarkable for his intolerance, who spared no pains to put the system of his doctrine, which he had begun 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 provided him with both horse and servant as far as Oxford, but left him without the means of performing the rest of the journey except on foot or in a wagon. His education during his father's lifetime had been superintended by his minister and clergyman, and on reaching the metropolis, through the influence of his spiritual uncle, 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. Stradfeild of Stoke Newton. Here he continued to reside during the ensuing thirteen years, at the end of which the engagement terminated by the death of Stradfeild, who left him some small property. He returned to Oxford, where he spent nine years. In 1757, he was appointed to the chair of Moral Philosophy at the University of Glasgow, and in the following year was put on the subject of the National Debt, and delivered an essay on the subject, which was followed by a long controversy with Mr. M. W. Morgan, 2 vols., 1758; 3, An Essay on the Present State of the People in England, with Morgan on Annuities, 1779; 4, The Vanity, Misery, and Infamy of Knowledge without suitable Practice of the Laws, and of the Influence of the Laws on the Importance of the American Revolution and the Means of making it useful to the World, 1780, 1784; 10, A Discourse on the Love of our Country, 1787, 1790; 11, Britain's Happiness and its Full Possession of Civil and Religious Liberty briefly stated and proved, 1791; 12, Sermons, vi., A Collection of the Most Eminent and Useful Observations on the Virtues and Excellencies of the American People, 1791; 13, On the Expectations and the Increase of Great Towns on Population, and particularly of the state of London, with respect to healthfulness and number of inhabitants, Phil. Trans., 1769; 14, On the Inability of Marshy Situations, 1774; 15, On the Difference between the Duration of Human Life in Town and in Country Parishes and Villages, 1775; 16, Short and Easy Theorems for finding in all cases the difference between the Periods of Life of an Individual, 1775; 17, On the Proper Method of calculating the Value of Reversions depending on Survivorship, 1776; 18, On the Effect of the Aberration of the Sun's Rays on the Temperature of the Sun's Disk, 1779. The Transactions of the year 1763 contain an essay on the solution of a problem in the theory of probabilities, which, though not entirely the work of Dr. Price, 1776.
of Dr. Price, requires to be noticed under the present article. The problem was: 'Given the number of times an unusual 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 at solution was made until 1657. Dr. Price found a solution in an unfinished state 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. Another solution was suggested by Dr. Price in the 'Transactions' of the following year, 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 Ugchurou, 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 acquired a knowledge of Latin, and then sent him to Oxford, where he entered St. John's College in 1596; he was elected probationer 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, 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, and, at the death of Caius of Ewelme. He 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 gravity and simplicity that it was said the town had never at any time 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 purposely to sit at his feet to gain instruction.' He was not content with himself in the dignities of the church, but he occupied twenty-six years. In 1632 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 wear the common clothes, as he says, liberorum heluo. 'Having,' continues Wood, 'first by indefatigable studies digested his excellent library in his mind, he was after forced again to devour all his books with hunger, and himself was often made a prey 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 Worcestershire, 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 a sort of learning, an excellent person of a prodigious memory, and so profound a divine, that he was called 'Columna fidei orthodoxae, ingens solches at academie oraculum,' &c. Though he died before the publication of the London Polyglott, he was well known to the editor Bishop Walton, to whom he sent his notes on the 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 died of the smallpox in 1646. He was a student of Exeter College. After his death, in 1648, was published, in small 4to., a work of his entitled 'An easy and compendious Introduction for reading all sorts of Histories,' with maps and astronomical tables. It is said that the book was several times reprinted, but it would now probably be thought more curious than useful, though it might furnish some valuable hints to persons engaged in teaching. The name of the late Bishop Prideaux on the title-page of Dr. Price's 'Transactions' of 1657, and on his 'Essays on Probability,' published in 1668, appears to have concealed the chance of the probability of the event happening being contained within the proposed limits, with the probability itself.
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 on his leading his mind on the subject of the predestination of the Elect, under which he had rested his own belief. Before the age of nineteen he styles himself rather a believer in the doctrine of Arminius, though he adds, 'I had by no means rejected the doctrine of the Trinity or the Atonement.' Before leaving home, he expressed a desire to be admitted a communicant in the Calvinistic congregation which he had been in the habit of attending with his aunt; but the minister having shelled from his reply that he entertained him as a relative to the reformation of the whole human race to 'the wrath of God and the pains of hell for ever,' on account of the sin of their first parent, his admission was refused.

On resuming his studies at the University he found the professors and students about equally divided upon most questions which were deemed of much importance, such as liberty and necessity, the sleep of the soul, &c., and all the articles of theological orthodoxy and heresy, which then became topics of animated and frequent discussion. The spirit of controversy 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 question on which the students were to be taught, and was an abridgment of their use in the future use. Before the lapse of many months, he conceived himself called upon to renounce the greater number of the theological and metaphysical questions, and to adopt a more simple method of dealing with them. As 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 extreme of heresy among us was Arminianism, and all of it, I believe, left the church (after xvii. 2) of Christ, if it be himself observed, in the writings of Moses. The Egyptians had great numbers of them, but they are left out of the Church, as were the Jews. 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, appear in it. This is observable, I believe, left the church (after xvi. 22.) that the most antient priesthood among all nations was that which fathers or heads of families exercised over their own dependents; and thus it will appear that kindly goyng forms of religious worship were at one time connected with the most formal religious exercises of a particular sort of human mind, or other would naturally spring from the paternal relation. (Shuckford's Connection of Sacred and Profane History.)

PRIESTLEY, JOSEPH, the son of Jonas Priestley, a clergyman born 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 language, and by means of his classical studies and his attendance on the dissenting minister; and when he had acquired some proficiency in this language, he commenced and made considerable progress in Greek, Hebrew, and Latin, but whether with or without the assistance of a tutor does not appear. In the mathematics he received some instruction from Mr. Haggerson, who had been educated under Maclaurin. From his habits of application and attachment to theological inquiries, his aunt early entertained hopes of his becoming a minister. Ill health, however, which in many cases induces a preference of a studied to a more active life, led him to abandon for awhile his classical studies and his other employments. We learn from his own statement 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 imprudently chilled by bathing, &c.' Without the aid of a master, he acquired some knowledge of the French, Italian, and German. With the return of health his earlier occupations were resumed, and at the age of nineteen (1752), he entered the dissenting academy at Daventry (now 'Coward College,' London), conducted by Mr. (afterwards Dr.) Aitworth, the successor of Dr. Doddridge. While a student at Daventry, he was the Calvinistic persuader as was also his aunt, who had omitted no opportunity of inculcating the importance of the Calvinistic doctrine. As however differences of opinion on doctrinal points were not with her sufficient ground for rejecting the society of her house, and he being of a kind of the English gentry, her house became the resort of many clergymen whose
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 at 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 before to write "History and Present State of Discoveries relating to Vision, Light, and Colours," 2 vols. 4to.; which he intended should 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 work itself, and by what means it was produced, the work itself did not evince 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 1767. 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 entitled "Impregnating Water with Air" (1771); the same year he communicated to the Royal Society his "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 meteorology" without previous advantages from 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 the study with a strong prejudice against the judgment and the limited 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 which led to important results, and an originality 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 discovery of truth seems to have been, in every case, his real end and undisguised object." He discovered oxygen gas, nitrogen gas, nitrous oxide gas, nitrous vapour, carbonic oxide gases, sulphurous oxide gas, fluoric acid gas, muriatic gas, and amines.

The first of these, and indeed the deploring it, he discovered in 1774, having obtained it by 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 air in the lungs, and that the blue blood resulting from the processes of combustion and putrefaction arose from a similar abstraction of oxygen; and recognised the property possessed by vegetable bodies 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 was aware, for he wrote to Professor Davy many years after (1795), he observed, "As to chemical lectureship, 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 attention to the common 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 in a dry philosophical theory, but was supported by a metaphysical theory notwithstanding the many facts and arguments adduced against it.

While at Leeds, very advantageous propositions 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 religious principles had been 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 librarian 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 his employment he accompanied his patron through France, Flanders, Holland, and Germany. At Paris his philosophical publications procured for him an easy introduction to several of the leading chemists and mathematicians, whom he describes as professes atheists; and by which means he was enabled to procure himself the necessary improvements on his chemical apparatus. In the following year he published his "History of the Decline and Fall of the Roman Empire" (1777). While resident with Lord Shelburne, who allowed him 40l. a year; and by the fruits of his laborious experiments, he printed 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 his "History of the Decline and Fall of the Roman Empire," which was much praised, and a fourth edition appeared in 1780. In the autumn of the same year he published "Disquisitions relating to Matter and Spirit" (1777), wherein his object is to show that man is a material being, and that our only prospect of immortality is from the Christian doctrine. In the following 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 his real motives, the conduct of both appears to have been strikingly honest. Priestley resided with an annuity of 150l. a year, and in 1783 Lord Shelburne made overtures for renewing the original engagement, which however Priestley thought proper to decline.

Among the books of church doctrine which, 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 faith 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 the part of the latter is no objection. 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 for the support of his 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 subscribe to any amount, which were declined by him, as this he declined. 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 Hagues periodicals; and in some of them the principle was burnt by the common hangman in the city of Dort. It was succeeded by his 'History of Early Opinions concerning Jesus Christ,' 1786, 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 acrimony which seem to have surprised his more courteous and feeble contemporaries.

His 'Familiar Letters to the Inhabitants of Birmingham,' from the ironical style in which they were written, exasperated even the populace, urged on by party malice and bigotry. His Reply to Rokeby'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 Bastille, at which however Priestley himself was not present, afforded to an ignorant mob the opportunity of gratifying the acquiescence in the miseries of the landed gentry that entertained towards him. 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 years' labour, after which they made an unsuccessful attempt to burn the dwelling and what was left in it.

[BERMOUTH.] An eye-witness of the 'riots' 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 was not paid, but he tells us that it fell short of his losses by 2000L. Individual generosity made amends. Among other instances of this kind, his brother-in-law made over to him the sum of 10,000L. invested in the French funds, besides a pension of 200L. a year.

After this he removed to Hackney as the successor of his deceased friend Dr. Price; but finding his society shunned by many of his former philosophical associates, among whom were the members of the Royal Society, from whom he formally withdrew himself, and seeing no prospect of enjoying permanent tranquillity in England, he determined on quitting it. Accordingly, April 7, 1794, he embarked with his family for America, and took up his abode at Northumberland in Pennsylvania. A few days before his embarkation he was presented with a silver instand bearing the inscription, 'To Joseph Priestley, LL.D., &c., on his departure into exile, from a few members of the University of Cambridge, who regret that this expression of their esteem is occasioned by the ingratitude in their country.' He had contemplated no difficulty in forming a Unitarian congregation in America; but in this he was greatly disappointed. He found that the majority disregarded religion, and those who paid any attention to it were more afraid of his doctrines than desirous of hearing them. By the American government, the former democratic spirit of which had subsided, he was looked upon as a spy in the interest of France. 'The change,' he writes in a letter dated Sept. 6, 1796, 'that has taken place is indeed hardly credible, as I have done nothing to provoke resentment; but being a citizen of France, and a friend to that Revolution, is sufficient. I asked one of the more moderate of the party whether he thought if Dr. Price, the great friend of their own Revolution, was alive, he would now be allowed to come into this country. He said, he believed he would not.' His wife died in 1796. His youngest son had died a few months previous. He himself, in 1801, became subject to constant indisposition and difficulty of swallowing any kind of solid food. This continued to increase till 1803, when, perceiving his end approaching, he told his physician that if he could prolong his life for six months, he should be satisfied, as in that time he hoped to complete the works upon which he was then engaged. These were 'Gilpin's History of the Christian Church from the Fall of the Western Empire to the Present Time,' 4 vols., 1802-3 (which had been preceded by his 'General History of the Christian Church to the Fall of the Western Empire,' 3 vols., 1790), and 'The Doctrines of Heathen Philosophy compared with those of Revelation' (posthumous). He died February 6, 1804, expressing the satisfaction he derived from the consciousness of a useful life and the confidence he felt in a future state in a happy immortality. On his death being known at Paris, his 'Edo' 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 informs us, during one of his summer excursions, concludes with the date 'Northumberland, March 24, 1792.' 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 Towill Rutt, forming the two volumes of his collected edition of Priestley's 'Philosophical and Miscellaneous Works,' in 5 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 'Biographia Britannica.'

[Archbishop.] PRIOMAT.E., the name given by Linnaeus to the first order of Mammalia, and thus characterised by him:—

Dentem primores incisores; superiores in, parallel. Mamm. pecora ilii.

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, Buiit.).

Simia, thirty-three species. Lemur (including Lemur volans). [Pleuroptera] Vesparilio, six species. [Chiroptera.]

END OF VOLUME THE EIGHTEENTH.

Printed by William Champion and Son, Stamford-street.